

EU enlargement. . . China's fruit & vegetable trade. . .
Pulses in the Farm Act. . . Outlook for rice, cotton, & sweet potatoes

U.S. Rice Market Facing Record Supplies, Low Prices

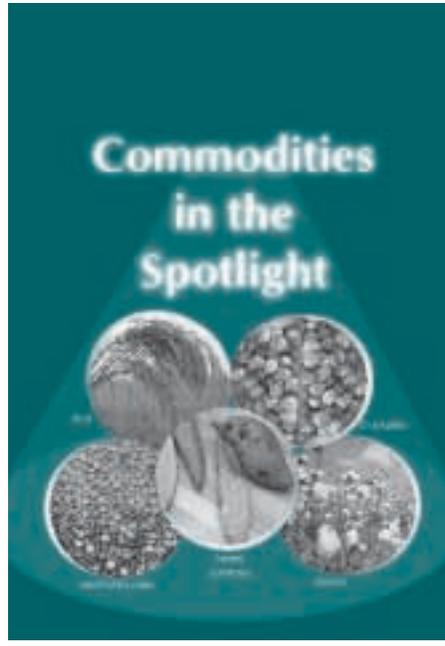
Rice prices in the U.S. are at their lowest level in more than 15 years, the result of weak global prices and a second consecutive year of record supplies at home. Despite a bearish price outlook and expectations of a huge carryover, U.S. rice producers cut plantings just 3 percent in 2002. The projected 2002/03 (August-July) U.S. season-average farm price of \$3.50-\$4 per hundredweight is down from \$4.17 a year earlier and the lowest since 1986/87. U.S. rice exports in 2002/03 are projected to be strong, up 3 percent from 2001/02, due in part to expanding global rice trade since 2000.

Price Recovery Elusive for Cotton

Commodity prices around the world have been relatively low since the late 1990s, and 2002 cotton prices remain about 30 percent below the 1990-94 average. While prices of some major field crops have recovered from their recent lows, cotton and rice have been left behind. Global ending stocks for cotton, rice, wheat, corn, and soybeans are all expected to fall during 2002/03, but cotton and rice prices defy the rising trend currently enjoyed by other crops. Stocks are contracting substantially more for wheat, corn, and soybeans than for cotton, particularly in the U.S. China's role in world cotton and rice consumption is greater than for the other crops, and China appears likely to continue the cotton stock reductions initiated several years ago.

Sweet Potatoes: Getting to the Root of Demand

For many Americans, sweet potatoes have a strong holiday connection (Thanksgiving, Christmas/Hanukkah, and Easter), but this root crop remains a popular vegetable year-round in the American South and in Asia, Africa, and Brazil. The U.S. is the world's 10th-largest producer of sweet potatoes. Production in 2001 was the third highest since 1965. Over the 1999-2001 period, U.S. sweet potato growers produced an average of 13.5 mil-



lion hundredweight from 90,500 harvested acres, and farm cash receipts averaged \$214 million.

Will the Farm Act Get Pulses Racing?

Dry peas, lentils, and small chickpeas—pulse crops—are relatively minor in acreage, supply, and use in the U.S. compared with corn, soybeans, and wheat. However, pulses could be poised for expansion due to their inclusion in the 2002 Farm Act. New marketing loan benefits, combined with agronomic advantages and a growing number of processors, may increase the attractiveness of planting pulses.

EU Enlargement: The End Game Begins

Ten Central and East European (CEE) countries are negotiating with the European Union (EU) for eventual membership. Accession could bring significant changes in production and trade for the CEEs. Impacts on world trade are likely to be small, but enlargement could alter U.S. exports to the region. U.S. grain exports to the CEEs have already dwindled, but the U.S. could lose much of its share of the large poultry market as EU sanitary requirements are adopted. Rising

CEE incomes resulting from EU membership could create opportunities for U.S. exports of other high-value products.

China's Increasing Presence in Global Trade of Vegetables & Fruits

China has raised its profile in the global market for vegetables and fruits, increasing its export value of those products by 33 percent between 1992-94 and 1998-2000, from \$2.3 billion to \$3.1 billion. With improvements in production, marketing, and transportation technologies, China strengthened its competitive position to eighth place in the world vegetable and fruit export market. Though a relatively low-volume importer, China expanded its import value of vegetables and fruits more than fourfold to reach \$413 million during the same period.

U.S. Organic Farming: A Decade of Expansion

American farmland under organic management has grown steadily for the last decade, with acreage for major crops more than doubling between 1992 and 1997, and again between 1997 and 2001. Certified organic pasture (including rangeland) also doubled between 1997 and 2001. Even so, some European countries are ahead of the U.S. in organic production. USDA's national organic standards, which took effect in October 2002, incorporate an ecological approach to farming and are expected to generate further interest in organic products.

Precision Agriculture Adoption Continues to Grow

Precision agriculture (PA) incorporates modern information technologies into the management of agricultural inputs and production practices. PA technologies fall into two broad categories: spatial and/or temporal sensing (e.g., yield monitors), and application control, also known as variable-rate technology (VRT). Corn and soybean farmers have been the most rapid adopters of PA sensing technologies. Fertilization of corn and soybeans has been the most widespread use of VRT.

Briefs

Livestock, Dairy, & Poultry

Broilers Headed for Record Production & Consumption

The U.S. broiler industry has seen continuous yearly gains in production since 1975, with 2002 likely to again set a new record. U.S. broiler consumption this year should also set a record, fed by strong consumer demand and competitive prices relative to other meats. In contrast, turkey consumption has not kept pace with production, and with exports down, stocks have grown. Egg production and consumption will likely show only modest gains in 2002, and egg exports are expected to be down.

Broiler production for 2002 is estimated at 32.4 billion pounds, 3.5 percent higher than the previous year. Production is growing as higher numbers of birds are slaughtered and average weight increases. Broiler production growth should slow in late 2002, with the number of broiler chicks for growout in the fourth quarter forecast to be only slightly higher than the previous year.

Broiler consumption reached a record 20.8 pounds per person (retail-weight basis) for the second quarter of 2002. Overall per capita broiler consumption for 2002 is expected to total just over 80 pounds, an increase of 3.8 pounds from 2001 and a new annual record. High domestic availability of broiler meat from expanding production and weakening exports have made prices very competitive relative to other meats and helped to promote consumption.

Broiler exports for 2002, forecast at 4.9 billion pounds, will be 12 percent lower than 2001 but close to the amount shipped in 2000. Second quarter 2002 broiler exports totaled 1.12 billion pounds, down 20 percent from the same period in 2001 primarily due to restrictions imposed by Russia on poultry imports from the U.S. Exports to Russia over the first 7 months of 2002 were 29 percent lower than the same period in 2001, but seem to be picking up again. The 141 million pounds shipped to Russia during July were lower than exports in June, but considerably

higher than in April or May. Exports to other major markets, such as Hong Kong/China and Japan, have also been

lower this year. Shipments to Japan declined due to a series of bans on imports of U.S. poultry products prompted by avian influenza outbreaks in some U.S. broiler and turkey flocks. Mexico and Korea were the only major markets where broiler exports increased over the first 7 months of 2002 compared with a year earlier.

U.S. Broiler Production* and Consumption to Reach Record Levels in 2002

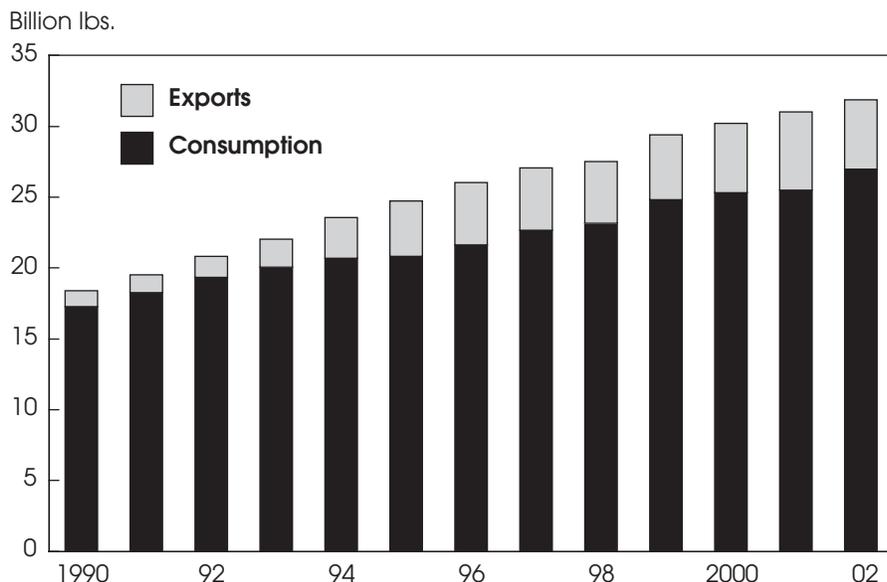
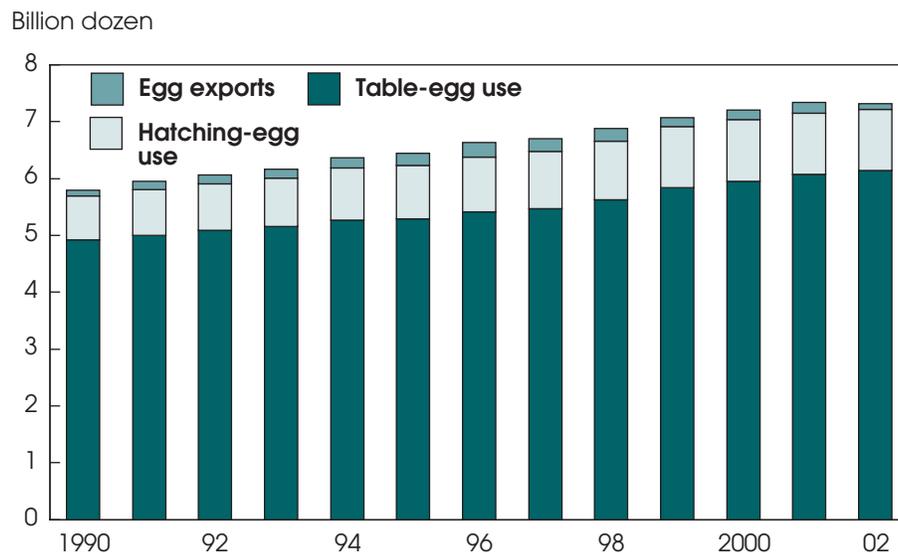


Table-Egg Use Also Forecast to Set New Record in 2002



*Height of bar indicates level of production. 2002 forecast.

Turkey production is expected to total 5.6 billion pounds in 2002, up 2 percent from the previous year. Over the past decade, turkey production in the U.S. has increased at about the same pace as population, and per capita consumption has remained relatively flat at 17.3-18.2 pounds annually. Over the first 8 months of 2002, U.S. turkey production totaled 3.8 billion pounds, 3 percent higher than during the same period in 2001. The increase in production, coupled with flat exports and flat domestic consumption, has resulted in higher stocks of whole turkeys and turkey parts. On September 1, 2002, turkey stocks were 682 million pounds, 25 percent higher than the previous year, due mostly to an increase in turkey parts (up 64 percent). The higher stocks put downward pressure on prices, with prices for turkey drumsticks and wings falling more than prices for whole turkeys and breast meat.

Turkey exports totaled 262 million pounds over the first 7 months of 2002, down 4 percent from the same period in 2001. Lower volumes to Mexico, Russia, and Korea accounted for most of the decline. Mexico, by far the largest export market for U.S. turkey products, imported 45 percent of U.S. turkey exports in 2001. Sluggish economic conditions there led to a 1.3-percent drop in the first 7 months of 2002 compared with a year earlier. The drop in exports to Russia, the second-largest market for U.S. turkey exports, was far more drastic—58 percent lower than during the same 7 month period in 2001. Import restrictions that curtailed broiler exports to Russia also affected turkey exports.

Lower turkey exports to Mexico, Russia, and Korea have been partially offset by a strong increase in shipments to Hong Kong, up 111 percent over the first 7 months of 2001. Contingent on continued strong exports to Hong Kong and resumption of turkey shipments to Russia, overall turkey exports in 2002 are expected to total 456 million pounds, down 6 percent from 2001.

Egg production in 2002 is expected to total 7.22 billion dozen, 1 percent higher than in 2001. Over the first 8 months of 2002, egg production was 4.78 billion dozen, up less than 1 percent from the

same period in 2001. Layers in production on September 1, 2002, totaled 336.5 million birds, 1 percent higher than the previous year. Layers producing table eggs totaled 278 million, while there were 58.4 million layers producing hatching eggs.

Egg use has been increasing and is forecast to total 6.08 billion dozen in 2002. Continuing strong growth is the **breaking-egg market**, which provides egg products for the food processing industry and pasteurized liquid eggs for the food service industry. Through August 2002, 1.25 billion dozen eggs, approximately 31 percent of all eggs produced for table use, went to the breaking-egg market. This volume was up 4 percent from the same period in 2001. While production of eggs for table use grew slightly over the first 8 months of 2002, wholesale egg prices averaged 4 percent below those for the same period of 2001. However, wholesale prices for eggs in July and August 2002 were above year-earlier levels and are expected to remain higher during the second half of 2002.

Hatching-egg use also increased in the first half of 2002 and is forecast to continue upward into 2003. Most the increase will come from higher hatching of eggs to produce chicks going into broiler production.

Egg exports in 2002 are forecast at 182 million dozen, down 4 percent from 2001. Through July 2002, egg exports were 99 million dozen, 3.8 percent lower than during the same period in 2001. The bulk of the decrease was due to a strong decline in exports to Japan, again the result of Japan's weak economy and its bans on imports of U.S. poultry products. Partially offsetting the lower shipments to Japan were larger exports to Canada (up 3.4 percent) and Belgium (up 97 percent). Almost all the increase in shipments to Belgium was processed egg products for use in the food service sector.

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November Releases—National Agricultural Statistics Service

The following reports are issued electronically at 3 p.m. (ET) unless otherwise indicated.

www.ers.usda.gov/nass/pubs/pubs.htm

November

- 3** *Crop Progress (4 p.m.)*
- 4** *Weather - Crop Summary (noon)*
Dairy Products
- 5** *Broiler Hatchery*
- 6** *Egg Products*
- 7** *Dairy Products Prices (8:30 a.m.)*
Poultry Slaughter (8:30 a.m.)
- 10** *Crop Progress (4 p.m.)*
- 12** *Cotton Ginnings (8:30 a.m.)*
Crop Production (8:30 a.m.)
Weather - Crop Summary (noon)
- 13** *Broiler Hatchery*
Turkey Hatchery
- 14** *Dairy Products Prices (8:30 a.m.)*
- 17** *Milk Production*
Crop Progress (4 p.m.)
- 18** *Weather - Crop Summary (noon)*
- 19** *Broiler Hatchery*
- 20** *Cold Storage*
- 21** *Dairy Products Prices (8:30 a.m.)*
Livestock Slaughter (8:30 a.m.)
Catfish Processing
Cattle on Feed
Chickens and Eggs
Farm Labor
Monthly Agnews
- 24** *Crop Progress (4 p.m.)*
- 25** *Cotton Ginnings (8:30 a.m.)*
Weather - Crop Summary (noon)
- 26** *Broiler Hatchery*
Peanut Stocks & Processing
- 28** *Agricultural Prices*
Dairy Products Prices
Monthly Hogs and Pigs

For more information see the ERS briefing room on poultry and eggs
www.ers.usda.gov/briefing/poultry/

Briefs

Agricultural Trade**Export Share of U.S. Ag Production Is a Stable 21 Percent**

Export share—the ratio of export volume to output (production volume, including stocks)—measures the portion of domestically-produced supply that is shipped abroad. The aggregate export share of total U.S. agricultural production was 21 percent in 2001, equal to the rate in 2000 and the average since 1996. The export share of U.S. crop production has been stable, averaging 24 percent from 1996 to 2001, and the export share of U.S. livestock products has averaged 6 percent. While the export share of crops in recent years is lower than in the 1980s and in the first half of the 1990s, the export share of livestock products is higher now than in the 1980s.

In general, as export share increases, U.S. farm income becomes more dependent on exports. Export share is influenced by factors such as prices and exchange rates, which are in turn affected by agricultural, trade, and macroeconomic policies. Demand for exports is further influenced by income growth, tastes, brand-name preferences, and product quality. Factors

affecting supply include abnormal weather, production costs, pest infestation, and trade barriers, including those related to food safety.

As U.S. exporters and foreign competitors faced dismal to depressed prices for farm commodities in world markets starting in 1998, the dollar's exchange rate assumed a weightier role in determining U.S. export competitiveness. With weak import demand, competition for markets becomes more dependent on exchange-rate-adjusted prices. As the dollar appreciated in value over the past 6 years, the export shares of U.S. crops and livestock products remained flat. Depreciated foreign currencies and comparatively strong U.S. domestic demand for food were contributing factors to the stable shares. During the 1990s, U.S. per capita food consumption continued its rise from 1,900 pounds in the 1980s to more than 2,000 pounds in 2000.

In 2001, however, export shares for a number of commodities appeared to

rebound slightly. Export shares of poultry meat and pork increased from 2000 to 2001, as did shares of fruits, nuts, vegetables, rice, cotton, tobacco, oilseeds, and vegetable oils. In some cases, such as vegetables, lower production estimates in 2001 helped raise their export share. But in general, higher export volume, particularly of horticultural products, was responsible for the boost.

The Significance Of Export Shares

Export shares gauge the size of foreign markets relative to the domestic market. They represent the capacity of U.S. farmers to supply customers outside the U.S. on the basis of price, product quality, and quantity or volume requirements. Over time, export shares reflect long-term demand and supply conditions as well as production costs in the U.S. relative to foreign markets.

Red meat and poultry meat export shares have trended upward. Beef and pork export shares have climbed steadily since the 1980s, except in 2001 for beef. Export shares of poultry meat have also consistently increased, except in 1998. However, dairy products and other animal products (tallow, hides, fish, and shellfish) show generally declining export shares reflecting

U.S. Export Shares of Commodity Output Holding Steady Since 1996

Commodity group	Average 1980-84	Average 1985-89	Average 1990-94	1995	1996	1997	1998	1999	2000	2001
<i>Percent exported</i>										
Total agriculture	27.2	22.9	21.6	24.0	20.8	20.1	20.8	21.2	21.0	21.1
Livestock	5.0	4.6	6.1	7.0	6.1	6.1	6.0	5.9	6.1	6.5
Red meat	1.2	2.0	4.1	6.0	6.6	7.4	7.5	8.0	8.1	8.4
Poultry meat	4.0	3.6	7.4	14.3	16.1	17.2	16.6	16.2	16.8	18.6
Dairy products	2.4	2.1	3.4	2.8	1.3	1.3	0.9	0.8	1.0	1.1
Other animal products ¹	42.5	40.6	29.6	30.4	26.6	24.3	27.9	26.6	27.4	28.6
Crops	31.2	26.5	24.6	27.5	23.6	22.8	23.7	24.2	23.9	24.1
Food grains	61.1	53.3	51.0	53.0	45.4	47.3	45.1	47.1	45.9	46.6
Coarse grains ²	27.4	23.4	21.2	26.1	20.4	18.2	21.7	21.2	21.0	20.5
Oilseeds/meal/oil	32.9	28.3	25.4	26.9	27.7	27.5	24.6	27.2	27.2	27.5
Fruits and nuts ³	8.9	8.9	12.3	13.1	13.5	12.3	12.3	13.2	12.3	13.5
Vegetables	5.3	4.2	5.9	6.8	6.4	6.9	7.3	6.7	7.1	8.1
Cotton and tobacco	45.9	41.0	38.6	38.6	37.6	36.0	34.0	38.1	40.8	51.4
Other crops ⁴	8.2	5.9	7.5	7.0	7.2	7.2	6.9	6.2	5.8	5.8

1. Includes hides, tallow, fish and shellfish; excludes live animals. 2. Includes corn, barley, sorghum, oats, and rye. 3. Includes fruit juices. 4. Calculated from value of exports and farm cash receipts; includes sugar, seeds, and nursery products.

Sources: USDA's commodity yearbooks, *Foreign Agricultural Trade of the U.S. (FATUS)*, and Production, Supply, and Distribution database.

Measuring Export Share

Ideally, export shares apply to primary commodities with minimal value added, since processing may add or subtract weight that changes the original content. Food preparations, fruit juices, and wine are examples of products that have significant value-added content. Since value adding occurs largely outside the farm sector, processed exports that differ considerably from their primary production content do not provide an accurate measure of the farm sector's total output and sales.

A related measurement problem occurs when spoilage or waste is not accounted for. As such, export shares are lower if waste is not subtracted from production. However, data on waste are not widely available and, when estimated, are usually combined with feed and seed use. Thus, export shares are not adjusted for wasted production.

Since exports can include products that were in storage, the difference between beginning and ending stocks is added to the volume produced when calculating export share. This adjustment is generally larger for less perishable commodities. Thus, export share is based on actual market supply rather than harvested production in a given year. The result is a more stable export share pattern.

the combination of weaker world demand and more abundant world supply. Since 1996, the export volume of U.S. animal products has risen at a pace faster than domestic animal production.

The gain in export shares for beef and pork from the 1980s is the result of a number of domestic and foreign factors. U.S. per capita consumption of red meat has declined since the 1970s. At the same time, steady gains in per capita income in

many foreign markets raised demand for high-value products such as meat. Russian demand for chicken meat, which was 43 percent of total U.S. chicken meat shipments in 2001, has climbed steadily, except in 1999 when it collapsed along with the Russian currency. And, as foreign demand for U.S. meat goes up, so does domestic demand for feed grains and oilmeal. As a result, export shares of U.S. coarse grains and oilseeds have remained flat since 1997.

Rising U.S. supplies of fruits, nuts, and vegetables, coupled with improved packaging, preservation, and transportation technology, have expanded foreign sales. In 2001, 29 percent of noncitrus fruit production was exported, compared with 12 percent in the late 1980s. Almonds led the surge in export share of tree nuts, which grew from 45 percent in the 1980s to 68 percent in 2001. Even as per capita consumption of fruits and vegetables in the U.S. rose over the past 2 decades, production grew faster in response to rising foreign demand. Improved storage equipment and facilities also made larger exports feasible, while lower trade barriers and shipping costs further boosted competitiveness of U.S. horticulture products. Overall, the volume of U.S. crop exports has risen since 1997, except in 2001 when it dropped 500,000 tons.

The overall U.S. export share appears stable at 21 percent despite the strong dollar and increased foreign competition. This ability to supply foreign markets even when import demand is relatively low indicates a level of competitiveness on which future potential sales can be based.



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Commodity Spotlight



USDA photo

U.S. Rice Market Facing Record Supplies, Low Prices

Rice prices in the U.S. are at their lowest level in more than 15 years, the result of weak global prices and a second consecutive year of record supplies at home. Despite a bearish price outlook and expectations of a huge carry-over, U.S. rice producers cut plantings just 3 percent in 2002. At planting, most producers estimated returns to rice production—including payments under the government marketing loan program—to be higher than returns from alternative crops.

The 2002/03 (August-July) U.S. season-average farm price (SAFP) for rough rice is projected at \$3.50-\$4.00 per hundred-weight (cwt), down from \$4.17 a year earlier. The 2002/03 SAFP is the lowest since 1986/87, and the SAFP has dropped every year since 1997/98. In 1996/97, the SAFP was the highest since 1980/81 at \$9.96 per cwt.

Monthly cash prices have weakened as well. In October, USDA reported the August 2002 U.S. rough rice average cash price at \$3.72 per cwt, down \$1.38 from a year earlier and the lowest since July

1987. The September mid-month price was an estimated \$3.79 per cwt.

Prices for U.S. milled rice have also declined. Prices for high-quality Texas long grain rice were reported at \$198 per ton in mid-October, down \$45 from a year earlier. Prices were as low as \$164 in June 2002. Prices for medium grain rice—grown mostly in California—actually strengthened early in the 2001/02 market year, a result of an almost 12-percent cut in California production that year. However, prices began to drop last spring after producers indicated an 11-percent increase in California plantings in 2002. By mid-October, high-quality California medium grain milled rice was reported at \$265 per ton, down \$22 from April.

Because the U.S. exports more than 40 percent of production each year, events in the global market have strong impacts on the U.S. rice sector. The U.S. accounts for about 1.5 percent of global production and nearly 12 percent of exports. Because the U.S. produces high-quality rice for domestic and export markets, it is often at a price disadvantage to lower quality rice from low-cost exporters such as Thailand

and Vietnam. Since June 2001, India has been the lowest priced exporter, a result of substantial export subsidies. China, Pakistan, and Burma are also major exporters.

U.S. Rice Plantings Drop 3 Percent in 2002

Despite several years of declining prices, U.S. farmers planted more than 3.2 million acres of rice last spring, just 3 percent below a year earlier. Plantings are projected smaller in 2002 in all producing states except California. Long grain, which accounts for more than 75 percent of U.S. rice acreage, is responsible for all of the decline.

At planting, the price outlook for long grain was lower than for medium/short grain. Long grain plantings this year are estimated at 2.54 million acres, a 6-percent drop from a year earlier. In 2001, the U.S. long grain crop was a record 165 million cwt. In contrast, combined medium/short grain plantings are projected at 693,000 acres in 2002, 12 percent above a year earlier. In 2001/02, a 23-percent drop in production (to 47.7 million cwt) boosted medium/short grain prices.

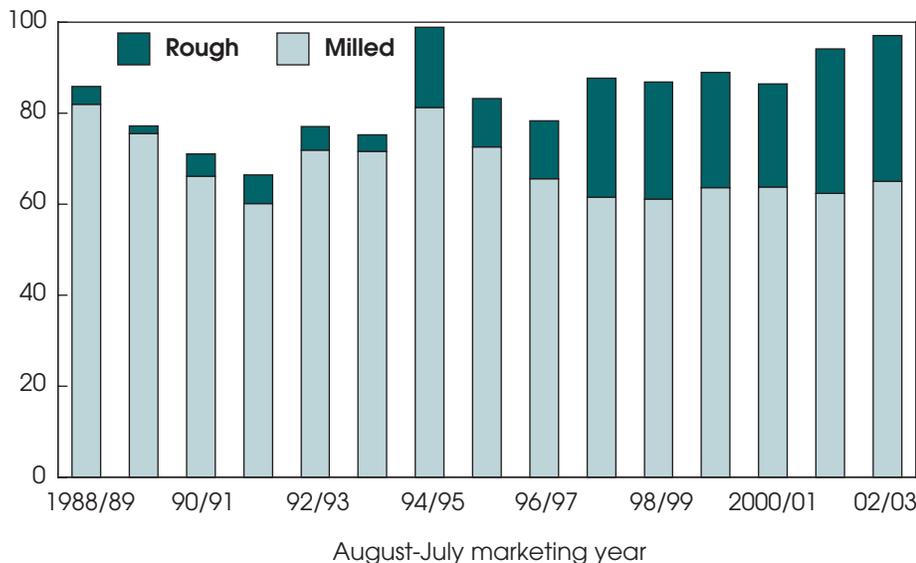
Six states account for more than 99 percent of U.S. rice production. Nearly all U.S. long grain rice is grown in the South—primarily in Arkansas, Louisiana, Mississippi, Missouri, and Texas. California produces more than two-thirds of the U.S. medium/short grain rice, Arkansas and Louisiana nearly all the rest. Although not included in National Agricultural Statistics Service estimates, smaller amounts of rice are grown in other states, with Florida accounting for most.

Last winter, when farmers made final planting decisions for the 2002 crop, payments to rice producers under the marketing loan program averaged \$3.14 per cwt, less than a dollar below the reported farm price at that time. Under the marketing loan program, when world prices are below the commodity loan rate, eligible producers are entitled to payment rates equal to the difference between the adjusted world price by class (as calculated by USDA) and the loan rate for rough rice. The average loan rate for all classes of

Commodity Spotlight

U.S. Rice Exports in 2002/03 to Be Second Highest on Record

Million cwt (rough basis)



2001/02 estimate; 2002/03 forecast.

Sources: 1988/89 to 2001/02, Bureau of the Census. 2002/03, USDA projections.

Economic Research Service, USDA

rice (long, medium, and short) is fixed at \$6.50 per cwt. By mid-May, payment rates had dropped below \$2.90 per cwt when world prices rose slightly. Weaker world prices boosted payment rates to \$3.28 by October, less than 50 cents below reported U.S. prices at the time.

U.S. Production & Exports At Near-Record Levels

The 2002/03 U.S. rough rice crop is projected at nearly 212 million cwt, fractionally below the 2001/02 record. The yield, estimated at a record 6,608 pounds per acre, is up 3 percent from a year earlier and is the fifth consecutive year of rising average yield. The U.S. average yield has risen nearly 17 percent since 1998, indicating stronger annual yield growth than achieved during the previous decade. The stronger yield growth is due primarily to the release of several new higher yielding varieties in the South. In contrast, average yields in California remain below records achieved in the 1990s.

Beginning stocks of all rice for 2002/03 are estimated at 39 million cwt, up 37 percent from a year earlier and the largest

since 1993/94. Imports in 2002/03 are projected at 13 million cwt, down fractionally from last year's record. The larger carryin more than offset the slight drop in production, boosting 2002/03 total supplies 4 percent to a record 263.9 million cwt.

The supply situation varies somewhat by class. For long grain, a 130-percent increase in beginning stocks to 26.8 million cwt—the largest since 1987/88—more than offset a 5-percent drop in production to 157.4 million cwt. This boosts long grain supplies 4 percent to a record 193.5 million cwt. For combined medium/short grain rice, a 32-percent drop in beginning stocks to 10.7 million cwt nearly offsets a 14-percent increase in production to 54.5 million cwt. At 68.9 million cwt, medium/short supplies are more than 2 percent larger than a year earlier.

In 2002/03 the U.S. is projected to export 97 million cwt (rough basis), up 3 percent from a year earlier and second only to the 1994/95 record of 99 million cwt. In 1994/95, emergency imports by Japan accounted for much of the expansion in U.S. rice exports. In 2001/02, the U.S.

exported 94.1 million cwt of rice, 13 percent more than a year earlier. Rough rice exports accounted for most of the expansion.

For 2002/03, rough rice exports—projected at a record 32 million cwt—are fractionally above a year earlier. Milled rice exports—projected at 65 million—are up 4 percent. Several factors account for the strong pace of U.S. rice exports since 2001/02.

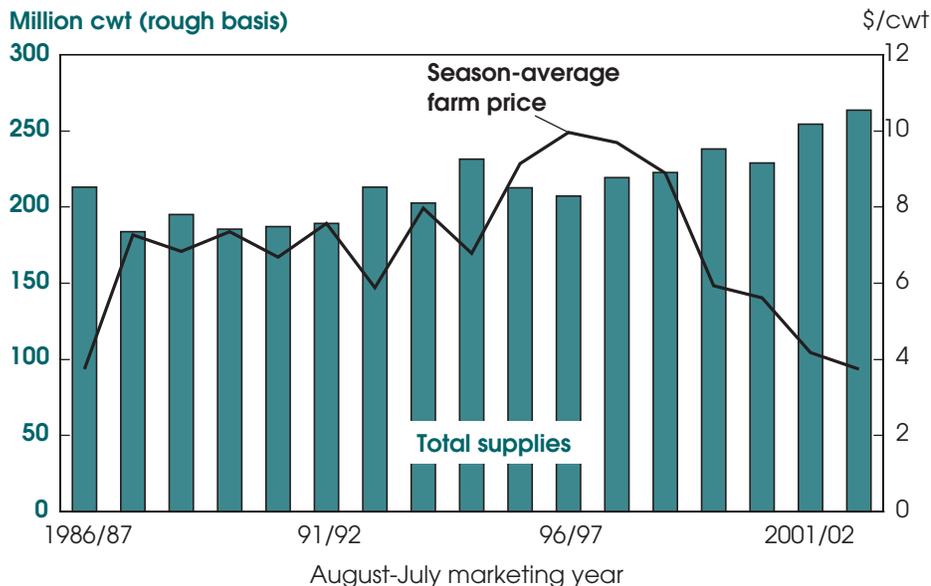
First, Mexico and Central America continue to import record amounts of rice, with all but a tiny fraction coming from the U.S. More than 90 percent of these imports are rough rice, nearly all long grain from the South. The U.S. is the only major exporter allowing rough rice exports. In 2001/02, Central America nearly doubled its rice imports from the U.S., and Mexico's imports of U.S. rice increased by more than 20 percent. Competitive U.S. prices, plentiful supplies, and declining rice production in both Mexico and Central America are behind the strong import growth in this region.

Second, the U.S. price differential over comparable grades of Thai rice declined substantially from July 2001 through August 2002. From more than \$105 per ton in August 2001, the U.S. price differential over Thai rice virtually disappeared by late May and remained at this record low level through August 2002. However, the combination of slightly higher U.S. prices and weakening Thai prices pushed up the difference to \$20-\$30 per ton in September and October. From 1996/97 through 2000/01, the U.S. price differential over Thai rice averaged \$91 per ton. Thailand—the world largest rice exporter—is a major U.S. competitor, especially in certain Middle East countries and South Africa. In recent years, India has successfully penetrated these markets as well.

Third, global rice trade has expanded every year since 2000, rising from 22.8 million tons (milled basis) in 2000 to a forecast 26.2 million in 2003—the second highest on record. Strong import growth by several top buyers—primarily Indonesia, Iran, Iraq, Nigeria, the Philippines, and Saudi Arabia—is responsible for most of the global trade growth since 2000.

Commodity Spotlight

Farm Price for Rice Is Lowest in More Than 15 Years



2002/03 projected. Projected price of \$3.50-\$4.00 is midpoint of range.
Sources: USDA's National Agricultural Statistics Service and Economic Research Service.
Economic Research Service, USDA

Long grain accounts for the bulk of the expansion in U.S. rice exports. In 2001/02, long grain exports jumped nearly 13 percent to 73.5 million cwt, with rough rice exports to Mexico and Central America accounting for most of the increase. Long grain exports are projected to increase more than 3 percent to 76 million cwt in 2002/03, second only to the 1994/95 record of 81.4 million cwt. For combined medium/short grain rice, 2001/02 exports jumped 15 percent to 20.6 million cwt. The first purchases of U.S. rice by South Korea (under its WTO minimum-access requirement) plus a large food aid sale to Uzbekistan were behind much of the growth. For 2002/03, medium/short grain exports are projected to be the largest since 1987/88 at 21 million cwt.

U.S. Rice Consumption Continues to Rise

Both total and per capita U.S. rice consumption continue to rise, with 2002/03 domestic consumption (not including seed use) projected at a record 121 million cwt, up almost 3 percent from a year earlier. Domestic consumption has expanded almost 3 percent a year since the mid-1990s, about half the rate reported during

the previous 15 years but still ahead of population growth.

Factors driving expanded domestic consumption include:

- a growing share of Asian-Americans and Hispanic-Americans in the population (groups whose per capita rice consumption is much higher than the U.S. average);
- greater demand for ethnic foods;
- a variety of new rice products;
- versatility of rice as an ingredient in other foods or as a side-dish; and
- effective marketing.

U.S. per capita rice consumption has been rising steadily since the late 1970s. For 2002/03, per capita consumption is projected at a record 26.3 pounds, up about a quarter of a pound from a year earlier and double the 1978/79 level. USDA's long-term forecast projects continued expansion in per capita rice consumption over the next decade.

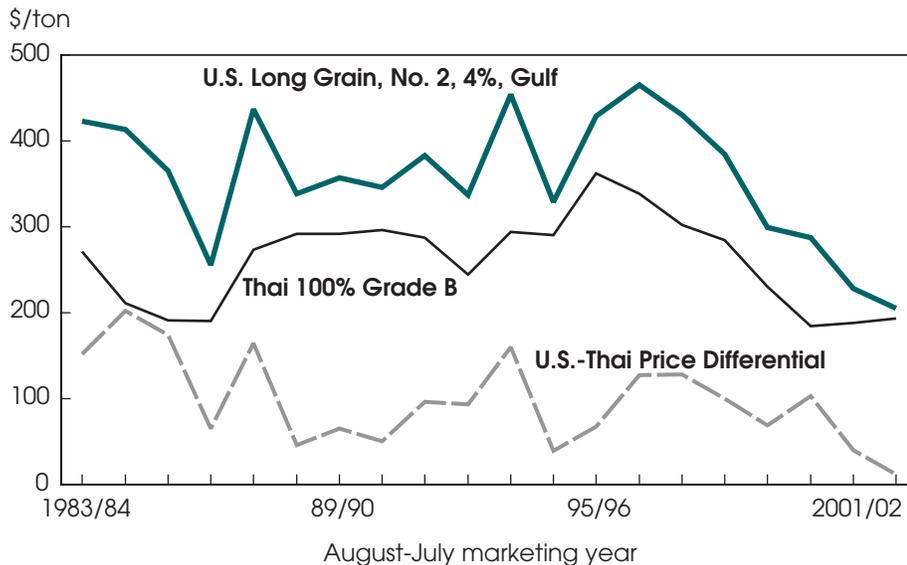
The domestic market (including consumption of imports) has expanded as a share of total use over the past 22 years as well. In 1980/81, the domestic market, including seed and residual (unaccounted losses and unreported use) accounted for 40 percent of total use, with the remainder exported. By 1999/2000, the domestic market accounted for nearly 60 percent of total use. In 2001/02 and 2002/03, the domestic market's share dropped slightly as exports rose, but the domestic share is projected to expand over the next decade. Food use has accounted for nearly all of the expansion in domestic use since the mid-1980s.

Long grain rice accounts for the bulk of U.S. consumption. For 2002/03, long grain consumption is projected at a record 88.7 million cwt, an increase of 3 percent from a year earlier. Most table rice in the U.S. is long grain. Processed foods—such as packaged mixes—use mostly long grain rice. For medium/short grain rice, domestic use is estimated at 36.3 million cwt, up 1 percent from a year earlier but well below the 1997/98 record of 44.2 million cwt. Breakfast cereals are a major processed food use for medium grain rice. Beer manufacturers and some food processors can shift among rice classes based on price and availability.

Imports account for a growing share of U.S. rice consumption. In 2001/02, imports of nearly 13.2 million cwt represented 11 percent of domestic use (excluding seed use), compared with less than 1 percent in 1980/81. Nearly all U.S. rice imports are varieties not currently grown in the U.S. Jasmine rice from Thailand accounts for 70-80 percent of U.S. rice imports. Basmati from India and Pakistan accounts for about 15 percent. Italy, Australia, and Egypt supply most of the rest. Imports are projected to continue increasing at a slightly faster pace than overall consumption.

Ending stocks for 2002/03 are projected at 41.9 million cwt, about 8 percent larger than a year earlier and the highest since 1986/87. Both long and medium/short grain stocks are projected higher in 2002/03. U.S. rice prices will likely face substantial downward pressure for several years due to large domestic supplies.

Gap Narrows for U.S.-Thai Milled Rice Prices



All prices quoted at local port. 2002/03 August-October only.
Sources: Thai prices, U.S. Ag Counselor, Bangkok, Thailand. U.S. prices, USDA's Agricultural Marketing Service.
Economic Research Service, USDA

Global Prices Remain Low

Global prices are just 10-15 percent higher than 30-year lows reported during much of 2001, despite 3 consecutive years of declining global production and ending stocks. In mid-October 2002, export prices for Thailand's 100-percent Grade B were quoted at \$193 per ton, \$20 per ton above a year earlier but well below the 20-year average of more than \$260.

Thai prices are currently being supported by large-scale government intervention purchases. In the global market, Thai prices continue to face substantial downward pressure from record shipments of subsidized exports from India and lack of major new sales. Record or near-record production in major rice importing countries and continued subsidized exports from India are likely to prevent a significant increase in global prices in the near term.

From April through October 2001, global prices were the lowest in nearly 30 years, with prices for Thai 100-percent Grade B averaging just \$175 per ton. Prices began to pick up in November 2001 and by mid-June 2002 were up \$25-\$35 per ton, due largely to Thai government intervention

purchases, concern by some importers over potential *El Niño* crop damage in 2002/03, and a temporarily tight supply situation in Vietnam. Prices have dropped \$15-\$20 since July 2002 as the Thai government sold some of its rice stocks and exportable supplies have increased in Vietnam.

For 2002/03, global rice production is projected at 381.2 million tons (milled basis), down 15.1 million from a year earlier and the smallest since 1996/97. India, the second-largest rice producer and a major exporter, accounts for most of this year's decline, following one of the worst monsoons in a century. Even with the smallest crop in a decade, India has enough rice to remain a top exporter. In addition, production in China—the world's largest rice producer—has declined sharply since 1999/2000, resulting from policy changes designed to encourage farmers to shift rice land to more profitable enterprises. Despite several years of declining production, China remains a major rice exporter. In contrast to China and India, rice production in top Asian importing countries—Indonesia, the Philippines, Bangladesh, and Malaysia—is projected to remain at or near record levels this year.

Global ending stocks for 2002/03 are projected at 105.5 million tons, a 20-percent drop from 2001/02 and the lowest since 1987/88. China accounts for the bulk of the decline in global stocks since 2000/01 as it attempts to draw down its burdensome rice stocks—much of it poor quality—which it began to accumulate in the early 1980s. India's stocks have also declined sharply from the 2000/01 record. For 2002/03, the global stocks-to-use ratio for rice is projected to be nearly 26 percent, slightly higher than wheat (22 percent) and well above coarse grains (15 percent). **AO**

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A detailed explanation of programs affecting rice producers is located on the ERS Website at www.ers.usda.gov/briefing/rice/policy.htm

Upcoming Reports—USDA's Economic Research Service

The following reports are issued electronically at 4 p.m. (ET) unless otherwise indicated.

www.ers.usda.gov

November

- 12** *World Agricultural Supply and Demand Estimates* (8:30 a.m.)
- 13** *Oil Crops Outlook***
- 14** *Feed Outlook (9 a.m.)***
- 14** *Wheat Outlook (9 a.m.)***
- 15** *Livestock, Dairy, and Poultry Situation and Outlook***
- 20** *U.S. Agricultural Trade Update***
- 21** *Agricultural Outlook (3 p.m.)**
- 21** *Fruit and Tree Nuts Outlook*
- 22** *Cotton and Wool Yearbook**
- 25** *Rice Yearbook**

*Release of summary.

**Electronic newsletter.

Commodity Spotlight



USDA photo

Price Recovery Elusive For Cotton

Commodity prices around the world have been relatively low since the late 1990s, and cotton prices remain about 30 percent below the 1990-94 average. While prices of some major field crops have recovered from their recent lows, cotton and rice have been left behind. Global ending stocks for cotton, rice, wheat, corn, and soybeans are all expected to fall during 2002/03 (August-July), but only cotton and rice prices defy the rising trend currently enjoyed by other crops. Stocks are contracting substantially more for wheat, corn, and soybeans than for cotton, particularly in the U.S. Also, China's role in world cotton and rice consumption is larger than for these other crops, and through 2002/03 China appears likely to continue the stock reductions initiated for most major crops several years ago.

The interaction of prices, production, and consumption is similar for most agricultural commodities. Major field crops like cotton, rice, wheat, corn, and soybeans are produced with at least similar if not in fact interchangeable inputs. Macroeconomic events tend to affect crops in a consistent manner across the board, and the agricultural policies of major producing and consuming countries also generate effects that are similar across a wide spectrum of crops. Less commonly, weather

events that produce unexpected levels of output can affect a number of crops simultaneously.

From the late 1990s through 2001, cotton, rice, wheat, corn, and soybeans were all affected by the macroeconomic environment, particularly the strong U.S. dollar, and a slowing world economy. Agricultural policies in the U.S., China, and India, while each very different, were similar for several crops within each country: the U.S. marketing loan programs and emergency payments protected U.S. producers' returns, China's efforts to shrink govern-

ment stocks shifted grain and cotton trade flows toward exports, and India's high rice and wheat support prices resulted in a shift toward exports as well.

During 1995-2001, world crop prices generally fell, and 2001/02 corn, wheat, and soybean prices averaged 10-20 percent below their average levels from the first half of the 1990s. Rice prices dipped 32 percent lower and cotton 43 percent. By August 2002, wheat prices had improved such that they were 14 percent above their 1990-94 average, and corn and soybean prices were each within 3 percentage points. But, cotton and rice prices remained about 30 percent below the 1990-94 average.

"Excess" Consumption Across Commodities

Generally, the correlations among commodity prices can also be observed in the correlation of "excess" consumption of five crops—cotton, rice, wheat, corn, and soybeans. Excess consumption of a commodity is the amount that world consumption exceeds production in a given year, divided by the total level of consumption of the commodity. Since shocks that affect these five crops are often common, the trends and yearly fluctuations in excess consumption will be related.

Early in the 1990s, consumption of these five commodities generally exceeded production, and prices rose. During the latter half of the 1990s the opposite held true, and recently the trend has reversed once again. Interestingly, during 2002/03, con-

Calculating Excess Consumption

Excess consumption in this article is simply calculated as (consumption - production) / consumption. It measures the difference between global consumption and production as a proportion of the total consumption of a given commodity in a given year.

For example: USDA's estimate of world production is subtracted from estimated world consumption. This difference is divided by the estimate of consumption to calculate a percentage which is comparable across commodities. The difference is calculated as a percentage of consumption rather than production since consumption has less annual variation than production. Weather shocks introduce substantially more variability into annual agricultural production than to consumption.

Averaging the estimates of excess consumption over more than 1 year removes the effects of weather shocks. A weather-driven change in production, or a temporary consumption shock, may induce an offsetting change in planted area and production or consumption in the next year. A moving average over 3 years removes these offsetting changes, providing a clearer picture of the economic conditions facing each commodity.

Commodity Spotlight

sumption is expected to exceed production for all five of these crops.

The trends in excess consumption roughly correspond to trends in world economic growth. According to the International Monetary Fund (IMF), world economic growth, which averaged 3.9 percent annually during 1994-97, and subsequently slowed with the Asian financial crisis, fell to 2.2 percent in 2001 and 2.8 percent in 2002.

Differential response to income shocks might be one factor leading to different consumption and price behavior for cotton. The other commodities are food or inputs into food production, and consumers have less latitude with food consumption in a given year than with clothing and other goods. This could in part explain why cotton's excess consumption was the most consistently negative of these commodities starting in marketing year 1996/97, with the onset of the Asian financial crisis.

A number of other commodities have prices as low as cotton, particularly industrial inputs. According to data from the IMF, copper, coffee, sugar, and tin prices through August 2002 were even further below their 1990-94 averages than were cotton prices. Groundnut, lead, and prices for both hardwood and softwood logs were all at least 25 percent below average in August 2002. Metals and hardwoods are industrial inputs, as are a number of other commodities with strong price correlations with cotton. In fact, the correlation between these prices and cotton prices is generally higher than between cotton and grains. For example, cotton's world price has shown an 80-percent correlation with copper prices since 1990 and a 79-percent correlation with rubber. In contrast, cotton's correlation has been only 47 percent with wheat, and 53 percent with corn. Despite profound differences in production, cotton and other industrial inputs see correlated price changes as economic growth ebbs and flows.

Another macroeconomic development affecting all these commodities is the strength of the dollar. Relatively undifferentiated goods whose producers have little market power are particularly likely to see price changes driven by currency fluctua-

World Prices for Cotton and Rice Remain Low in 2002

	Cotton	Rice	Soybeans	Corn	Wheat
<i>Index (1990-94 average=100)</i>					
1995	115	128	121	154	150
1996	106	120	129	119	121
1997	98	107	112	105	97
1998	80	101	86	88	82
1999	71	82	83	83	77
2000	77	65	80	82	90
2001	57	68	80	86	89
2002	67	70	96	105	124

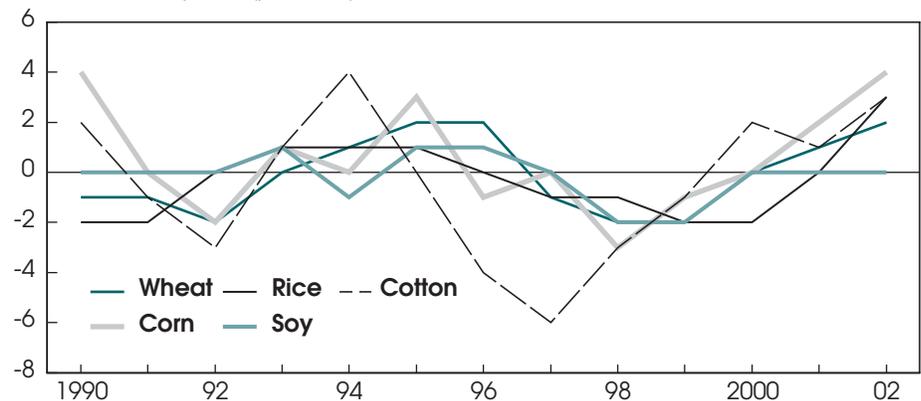
August-July averages. August-September 2002.

Source: USDA—Cotton: A-Index, Northern Europe; Rice: Thailand, 100% B; Soybeans: #2 yellow, U.S. Gulf ports; Corn: #3 yellow, U.S. Gulf ports; Wheat: #2 hard winter, U.S. Gulf Ports.

Economic Research Service, USDA

Excess Consumption of Major Field Crops is Trending Upwards

Excess consumption (percent)*



*Excess consumption is the amount that global consumption exceeds production in a given year, divided by the total level of consumption.

Economic Research Service, USDA

tions, and agricultural commodities are a good example. Since strength of the U.S. dollar in part reflects developments within the U.S., the dollar has strengthened with respect to virtually every currency in the world. However, some currencies have weakened more against the dollar than others, and some countries have little involvement in one commodity but a great deal in another.

Thus, the impact of the dollar on world prices of various commodities can differ greatly. For example, Argentina and Brazil account for a larger proportion of world soybean production (42 percent) than any other commodity. Their currencies have also weakened more than virtually any other country recently. Weighted for foreign soybean production, the U.S. dollar strengthened by about 80 percent between January 2001 and October 2002.

In contrast, the equivalent production-weighted measure for cotton strengthened by only 12 percent, and for rice only 2 percent. Weighted by corn production, the dollar strengthened 20 percent and for wheat production 7 percent. The relative ranking of expected dollar impacts holds over longer time periods as well, so relatively low cotton and rice prices compared with other commodities do not seem attributable to a greater exchange-rate effect.

Also, China's recent accession to the WTO indicates its increasing integration into world markets, but this integration is still incomplete. Thus, China's agricultural policy decisions are driven by internal developments to a greater extent than if China were more fully integrated into the world economy. Since China is either the world's largest (rice, cotton, and wheat),

Commodity Spotlight

or world's second-largest (corn and soybean meal) consumer of the commodities examined here, shifts in its agricultural policy can correspondingly affect world markets of these products. A substantial portion of the world's excess consumption in recent years is attributable to China's efforts to reduce its enormous government stocks. While much of the data on China's agriculture has been questioned at one time or another, it is clear that China either has been importing less in recent years or has been exporting more. One result is growing commodity stocks outside China, particularly rice and cotton.

Near-Term Outlook for U.S. Stock-Holding

While foreign cotton stocks in 2002/03 are projected to be the lowest in 8 years, U.S. stocks are expected to remain at relatively high levels when compared with the 1990s. U.S. cotton stocks are projected at 6.8 million 480-pound bales in 2002/03. Although 11 percent lower than a year ago, U.S. cotton stocks remain an astonishing 90 percent above the 1990-99 average. Consequently, the U.S. has increased its share of world cotton stocks considerably as foreign countries, such as China, have reduced theirs.

The buildup in U.S. stocks in 2001/02 was largely the result of a record crop, as the rise in production outpaced gains in demand. At the same time, 2001/02 foreign production matched its record output

of 10 years earlier, pushing world supplies to their largest level ever. This abundant global cotton supply, along with the economic recession that began in the U.S. in 2001, resulted in low world cotton prices in 2001/02. Subsequently, lower prices led to reductions in prospective cotton production in 2002 and also contributed to an increase in worldwide cotton demand.

In the U.S., area planted to cotton in 2002 decreased by 9 percent to the lowest in 4 years. As planting time approached this spring, alternative crops became relatively more profitable. Declines in 2002 cotton area were largely the result of cotton farm prices falling to 30-year lows last season. In addition, incentives guaranteed under revenue insurance programs were less attractive this year due to the lower prices.

Across the Cotton Belt, planted area declines were prominent and, as a result, 2002 production is currently projected at 18.1 million bales, more than 2 million bales (11 percent) below last season's record. Furthermore, lower cotton production is expected in each region, except the Southwest (Texas, Oklahoma, and Kansas), compared with 2001/02. Production in the Southwest is forecast 17 percent above last season as harvested area is projected to be the highest in 3 years, while at the same time, yield is forecast to be the second highest ever. Meanwhile, higher yields in the Delta and West regions only partially offset the effects of the significant area declines experienced

this season. In contrast, Southeast yields, despite only a slight reduction in area are projected to be the second lowest in 7 years as severe dryness prevailed throughout much of the growing season. Overall, U.S. cotton yield is estimated at 674 pounds per harvested acre, 4 percent below 2001 but the second highest since 1996. In contrast, U.S. soybean yields are the second lowest since 1995, while corn and wheat yields are the lowest since 1997 and 1991, respectively.

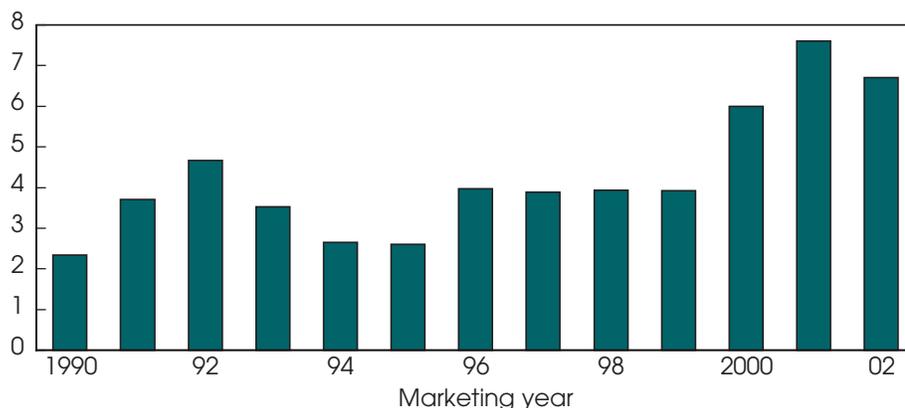
While U.S. output is expected lower this season, demand for U.S. cotton is currently projected up 1 percent to 18.9 million bales, with mill use rising slightly and exports holding constant. Unlike the previous decade, the bulk of U.S. cotton is now going to foreign mills as spinning capacity in the U.S. has declined dramatically. Domestic mills have been under tremendous price pressure from imports as the U.S. dollar recently reached heights not seen in over a decade. In fact, U.S. imports of cotton products have risen for 13 consecutive years and counting. As a result, many U.S. mills have had to restructure their businesses, and many plants have closed. The decline in the U.S. spinning industry has indeed put an additional burden on the U.S. to export its cotton to limit stock building. Last season, U.S. exports were near 75-year highs and are projected to remain near this level in 2002/03.

With the U.S. becoming more dependent on cotton exports, global supply and demand play a larger role in the U.S. cotton market. Global supply and demand are currently driving down world prices. While cotton is an annually produced commodity subject to shocks similar to other field crops, cotton prices, at the present time, seem to be more closely associated with nonfood industrial inputs, such as copper. Global manufacturing has seen a sluggish rebound from recent world economic activity. Prices for cotton and some other nonfood inputs have languished while grain prices have recovered following this summer's drought. **AO**

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U.S. Cotton Stocks to Remain Above 1990s Levels

Million 480-lb. bales



2002 forecast.

Economic Research Service, USDA

Commodity Spotlight



USDA photo

Sweet Potatoes: Getting to the Root of Demand

For many Americans, “sweet potato” invokes thoughts of holiday cheer. While sweet potatoes certainly boast a strong holiday connection (Thanksgiving, Christmas/Hanukkah, and Easter), this root crop also remains a popular vegetable year-round in the American South and in Asia, Africa, and Brazil. In the southern U.S., sweet potatoes are also referred to as yams, although few true yams are grown in the U.S.

Two basic types of sweet potatoes are grown in the U.S.—moist-flesh types (which feature sweet, orange, soft, moist flesh when cooked) and dry-flesh types (which have dry, starchy, firm flesh when cooked). The moist types, also known as dessert-types or soft-fleshed varieties, account for most of the output in the U.S. and are also the types frequently—and imprecisely—referred to as “yams.”

The U.S. is the world’s 10th-largest producer of sweet potatoes. China produces 85 percent of the world’s crop, followed by Indonesia (2 percent), Vietnam (2 percent), and Uganda (1 percent). In China, an increasing share of the crop has been shifting into animal feed (largely for hogs) and industrial markets (largely for starch) over the past 30 years.

Over the 1999-2001 period, U.S. sweet potato growers produced an average of 13.5 million hundredweight (cwt) from 90,500 harvested acres, and farm cash receipts averaged \$214 million. According to the 1997 Census of Agriculture, sweet potatoes are grown on 1,770 farms—down 34 percent from 1992 and 44 percent from 1987. About 25 percent of area is irrigated, with about a third of this acreage in California, which is entirely irrigated. Since 1992, Louisiana growers have doubled their irrigated area to 30 percent. Only 9 percent of North Carolina’s crop is irrigated.

The long-term downward spiral in production that began after the Depression has been reversed. Since reaching a trough in 1988, U.S. sweet potato production has trended higher, rising 15 percent between 1989-91 and 1999-2001. Production in 2001 was the third highest since 1965. U.S. acreage (1.1 million) and production (48 million cwt) peaked in 1932.

North Carolina Is Top U.S. Producer

Except for California, the U.S. sweet potato industry is concentrated largely in the Southeast. North Carolina, Louisiana, and California are the top three producing

states and accounted for about 79 percent of the U.S. crop during 1999-2001. Mississippi and Alabama round out the top five states. Production in Mississippi, since bottoming out in 1989, has trended upward, increasing eightfold to 2.2 million cwt by 2001—the highest since 1946.

During 1999-2001, North Carolina accounted for about 37 percent of the U.S. sweet potato crop and 29 percent of the farms growing sweet potatoes. With production trending upward the past 8 to 10 years, the state has remained the leading producer since 1970. When USDA crop estimates began in 1868, Georgia was the leading producer, with North Carolina second. The majority (about three-quarters) of North Carolina’s output is sold in the fresh market, with the remainder sold for processing or used for seed stock. North Carolina markets fresh sweet potatoes year-round throughout the country, with substantial volume moving to New York, Baltimore, and Chicago. Sweet potatoes contribute about 20 percent of the state’s vegetable cash receipts.

Louisiana, the second leading sweet potato producer, accounted for about 24 percent of the U.S. crop during 1999-2001. Louisiana was the leading sweet potato state from 1943 to 1969. A majority of its output is used for processing (largely canning). However, the fresh-market share has likely been rising as much of the growth in the state’s output over the past 8-10 years appears to have gone into the fresh market. Fresh markets for Louisiana include Chicago and Detroit. At \$46 million, sweet potatoes account for 57 percent of the state’s vegetable cash receipts.

California, with one-fourth the acreage of North Carolina and the highest yields in the industry, is the third leading producer of sweet potatoes, accounting for 18 percent of the U.S. crop during 1999-2001. As in North Carolina and Louisiana, production has been trending slowly upward over the past 8-10 years. More than 75 percent of the crop is likely sold in the fresh market annually. Major fresh markets for California growers include Los Angeles, San Francisco, and Seattle. At \$63 million, sweet potatoes account for just 1 percent of the state’s vegetable cash receipts.

Commodity Spotlight

Sweet Potatoes—What They Are, & Are Not

Sweet potatoes are not yams. The yam is a starchy tropical root crop of Asian or African origin, unrelated to the sweet potato family. Nor are sweet potatoes (*Ipomoea batatas*) related to white (Irish) potatoes.

The word “yam” was originally derived from the African word “nyami.” But what is marketed in the U.S. as a “yam” is really a type of sweet potato. True yams bear no relationship to the sweet potato. The roots, which tend to be big, rough, and starchy, are grown in tropical areas largely outside the U.S. In some areas, the term “yam” has been used in marketing to differentiate moist-type sweet potato varieties from the less common dry types. When used to refer to sweet potatoes, the word “yam” must be accompanied on labels with the words “sweet potatoes” under USDA requirements.

The outer skin of a sweet potato tends to be smooth and can vary in color from coppery orange to pale yellow with several variations, including purple. The inner flesh can range from white to yellow to red with deep orange flesh most common today. The so-called dry varieties of sweet potatoes tend to be dry, light in color, and firm in texture when cooked.

Native to tropical America (likely from South America), sweet potatoes are part of the morning glory (*Convolvulaceae*) family. Columbus observed them during his expeditions to the West Indies, while DeSoto later found sweet potatoes growing in what is now Louisiana. Native Americans were reportedly growing sweet potatoes in present-day Georgia when English settlers arrived.

The Incas of South America and Mayans of Central America reportedly grew several varieties, one for food and others for coloring materials to use in paints. As a tropical plant, sweet potatoes do not thrive in cool weather and therefore did not readily become popular in Europe, even in the warmer regions of the Mediterranean. Sweet potato seed stock is thought to have been spread by Spanish and Portuguese explorers to various regions of the world.

Sweet potatoes for commercial use are grown largely from transplants—plantlets (slips or sprouts) produced from the roots of the previous crop. These are most commonly produced from certified root stock, but can be produced from farm-held seed stock.

In some countries, the leaves and shoots of the sweet potato plant are also used for food, as they are a nutritious leafy green, high in iron and vitamins A and C. In many parts of Africa, sweet potatoes are a staple food crop. In Uganda and Kenya, growers chip and sun-dry a portion of the crop for later use.

Exports Sprouting

The U.S. is self-sufficient in production of sweet potatoes and is a net exporter. Export sales totaled \$14 million in 2001, while imports were valued at \$4 million. Only about 1 percent of sweet potato consumption is satisfied through imports. Few imports enter the continental U.S., with most volume (97 percent in 2001) moving directly from the Dominican Republic into Puerto Rico.

Until recently, U.S. trade in sweet potatoes has not been a significant factor in the market. Since the early 1990s, U.S. sweet potato exports have been on the rise. Between 1989-91 and 1999-2001, fresh/frozen sweet potato export volume nearly tripled to 43 million pounds. More than 3 percent of supply is now exported—up from 1 percent a decade ago. Canada remains the major market for U.S. sweet potatoes, but substantial gains have been realized in the United Kingdom (UK).

While volume shipped to Canada has increased, its share of U.S. exports has declined. In 2000, Canada accounted for 91 percent of U.S. export volume. This slipped to 82 percent in 2001 and stood at 71 percent through the first 6 months of 2002. Meanwhile, the UK's share has risen from 6 percent in 2000 to 24 percent during the first half of 2002.

The Seasonal Factor

Although some sweet potatoes are sent to market directly after harvest, most sweet potatoes are marketed from storage after curing. Curing involves keeping a freshly harvested crop in a heated, humid room (typically 7-10 days but sometimes longer) to allow the skin to heal and set. Curing also allows the sugar content of the sweet potato to rise (as starches are converted to sugars), making cured roots sweeter than those sold “green.”

Some varieties can be stored for as long as a year in controlled-atmosphere storage. Because of their soft flesh, shrinkage and loss while in storage (as much as 2 percent a month) tends to be greater than for white potatoes. Sweet potatoes are typically washed, graded, and sometimes waxed before being shipped to market.

The period surrounding major holiday celebrations continues to dominate sweet potato sales. Sweet potato shipments are strongest during the fourth quarter (October-December), moving about 39 percent of fresh sweet potatoes. The combination of holiday demand and large harvest-period volume (harvest activity peaks in October) keeps shipments strong during this quarter.

Although market demand during the holidays remains robust, its share has weakened over the past decade with the industry working to expand year-round markets (especially in areas other than the South). In fact, shipment volume during the “off-season” (May-August) increased to 22 percent of annual market shipments during the early 2000s. This is up from 19 percent in the 1990s and 18 percent during the 1980s, reflecting improved storage quality and suggesting an expansion in demand outside traditional market windows.

Seasonal price movements are those that regularly occur within a year, and are more pronounced when a crop is harvested and then marketed from storage. Sweet potato prices generally reach their seasonal highs during July and August as storage supplies run low and the new season begins. Prices reach seasonal lows in October with the peak of harvest. After adjusting for inflation, shipping point (grower) prices for sweet potatoes have remained constant over the past decade. Retail prices are not reported for sweet potatoes.

Season-average sweet potato shipping-point prices gained an average of 33 cents per cwt each year between 1970 and 2001. The price of sweet potatoes averaged \$16.10 per cwt (f.o.b. shipping point) during the 1999-2001 seasons, up 6 percent from the previous 3 years (1996-98), and 23 percent above the 1989-91 average. Through September 2002, the index of producer prices for sweet potatoes averaged 8 percent below a year earlier.

Per Capita Use Steady

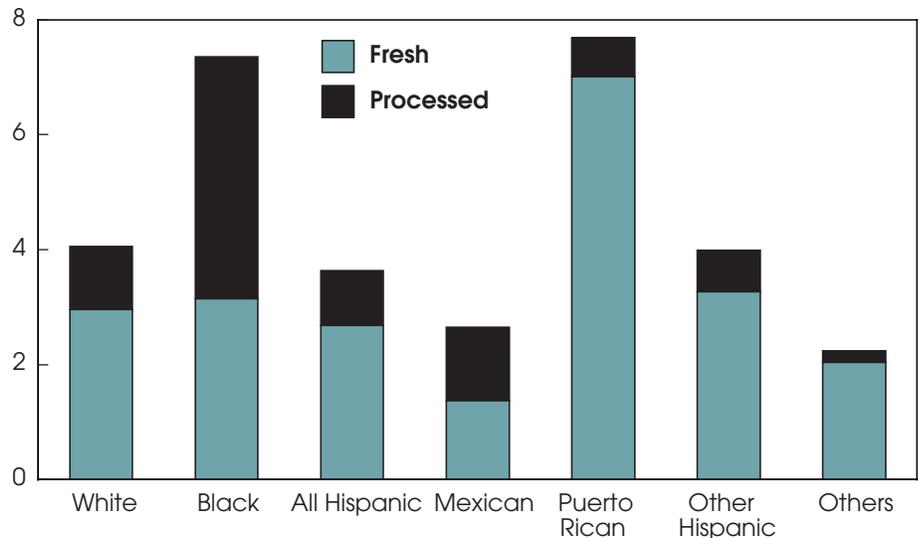
On average, more than three-quarters of the annual U.S. sweet potato crop is sold as human food. Nonfood uses include animal feed (5-9 percent), seed (7-9 percent), farm household use (about 2 percent), and shrinkage and loss. In the U.S., about a quarter of the sweet potatoes sold for food are processed into canned products (including baby food). About 4 percent of sweet potatoes sold for food are processed into frozen products. A small amount (2 to 3 percent) is chipped or dehydrated. This leaves about two-thirds of sweet potato sales for the fresh market.

During 1999-2001, U.S. sweet potato consumption averaged an estimated 1.2 billion pounds. On a per capita basis, this works out to 4.1 pounds—unchanged from 1989-91 but down from 4.7 pounds in 1979-81. During 2001, fresh-market use was estimated to be 2.9 pounds per person, with the remaining 1.4 pounds sold as processed products (largely for canning). Total sweet potato consumption is similar to mushrooms but exceeds green peas, cauliflower, and asparagus.

Per capita use of sweet potatoes trended downward between the 1920 peak of 29.5 pounds and the early 1930s before surging briefly during the Depression. In the mid-

Per Capita Use of Sweet Potatoes Highest Among Puerto Ricans and Blacks

Lbs. per person



Utilization for 2001 derived by ERS from 1994-96 *Continuing Survey of Food Intake by Individuals*. Per capita use on a fresh-equivalent basis.

Economic Research Service, USDA

1930s, per capita use embarked on a long downward trend, which lasted through the early 1980s. Despite twice falling to a record-low 3.7 pounds in 1993 and 1999 (due to weather-reduced output), sweet potato use has largely stabilized since the mid-1980s—hovering around 4.1 pounds. The recent stability in consumption likely reflects:

- industry efforts to expand fresh sweet potato use beyond the holiday niche;
- increased consumer recognition of the nutritional qualities of sweet potatoes;
- introduction of sweet potato chips and fries; and
- better quality due to improved storage and handling techniques.

While consumption has undoubtedly received a boost from these factors, several opposing forces appear to be offsetting the industry's attempts to raise use. These include:

- increased away-from-home eating;
- attraction to ethnic and spicy foods; and
- greater diversity in the nation's population.

For most vegetables, the latter three market forces have been instrumental in driving consumption higher over the past two decades. However, the sweet potato market appears to have more in common with the cabbage market than, for example, the onion or broccoli markets. Cabbage and sweet potatoes are similar in that both have suffered long-term declines in consumption after peaking earlier in the last century. Both are hardy staples with some storability, much like white potatoes.

But white potato growers have been able to offset declining interest in fresh potatoes with rising sales of frozen and dehydrated products (*AO* October 2002). These products are also featured in the rapidly expanding food-service arena and are widely accepted by most ethnic groups.

Sweet potatoes have had minimal success in the food-service industry, where much of the growth in food consumption has taken place since the 1960s. Although the industry has developed and marketed sweet potato fries, chips, and other new products, widespread adoption has remained elusive. However, the addition of sweet potato side dishes by various national restaurant chains appears to

Commodity Spotlight

promise future growth in this market segment.

While vegetables like garlic and onions have benefited from a broadening of the national diet to include various ethnic foods, sweet potatoes have been largely left behind. Burgeoning Hispanic and Asian populations over the past 20 years have brought renewed demand for peppers, onions, tomatoes, and dry beans, but the sweet potato industry has realized few benefits since these two ethnic groups are not major consumers of the moist dessert type of sweet potatoes that dominate the U.S. market. Many of these growing ethnic markets prefer the dry-flesh varieties common to their homelands.

Sweet potatoes have been called a “nutritional powerhouse”—frequently ranked among the most nutritious of all vegetables. Because of their orange/yellow color, they are very high in beta carotene (higher than carrots), which is converted by the body to vitamin A. They also contain the carotenoids lutein and zeaxanthin. Sweet potatoes also provide a substantial amount of vitamin C, are a good source of vitamin B6 and dietary fiber, and provide small amounts of several other vitamins and minerals, such as potassium, manganese, and folic acid.

Like white potatoes, sweet potatoes are multipurpose vegetables. Fresh-market sweet potatoes can be baked, microwaved, broiled, grilled, and boiled, but can also be used in a wide variety of recipes such as green salads, casseroles, pasta sauces, plate garnishes, dipping vegetables (fresh-cut sticks), relish trays, sautéed vegetable medleys, soups, stews, and stir fry. They also appear in processed forms as frozen (sliced, diced, french fried, pattied, twice-baked), dried/dehydrated (flakes, flour, chips), and canned (cut/sliced, candied, mashed, baby food, pie fillings). Sweet potatoes are also used in manufacturing other prepared foods such as bread products, custards, cookies, pies, and cakes. In some countries, alcohol is distilled from sweet potatoes.

Although there are no price or income support programs for sweet potatoes, USDA has regularly purchased processed sweet potato products for use in school lunch and other feeding programs. During fiscal years

1997-2001, USDA purchased about 8 million pounds annually (product weight) valued at about \$4 million (95 percent were canned). This year, based on purchase offers released in August and September, USDA plans to purchase up to 30 million pounds (product weight) of fresh, canned, and frozen sweet potato products for donation to child nutrition and other domestic food assistance programs.

Who Eats Sweet Potatoes?

On any given day, 1 to 2 percent of Americans consume at least one food containing sweet potatoes, according to data derived from USDA's 1994-96 *Continuing Survey of Food Intakes by Individuals*. This trails such popular foods as french fries (13 percent), catsup (16 percent), and garlic (18 percent). Fresh-market sweet potatoes are used on any given day by nearly 1 percent of consumers, while processed products (frozen, canned, and dried) appear on the plates of less than 1 percent of U.S. consumers daily. The low incidence of daily consumption likely reflects the seasonal nature of sweet potato demand and the relatively low adoption rates by the food-service and industrial foods industries.

More than many other mainstream vegetables, sweet potatoes are consumed at home (89 percent). This partly reflects the seasonal nature of the market with the incidence of home cooking featuring traditional holiday favorites, as well as the lack

The Carver Connection

George Washington Carver, well known for his work with peanuts, also figured prominently in the sweet potato industry of the early 20th century. According to the George Washington Carver Foundation at Tuskegee University, Carver counseled growers in the South to rotate crops to help condition and enrich depleted soils. To this end, he helped increase production of sweet potatoes by creating new markets for growers through development of a myriad of products derived from sweet potatoes. Notable products included textile dyes, stains, shoe polish, starch, inks, wood fillers, hog feed, alcohol, sugar, candy, vinegar, and various dehydrated products.

of convenient products that can be used in restaurant and institutional settings.

In the away-from-home market, fast food accounts for just 2 percent of sweet potato consumption, with standard full-service restaurants accounting for another 5 percent. Other, largely institutional outlets account for another 4 percent of consumption. Few ethnic restaurants (e.g., Italian, Chinese, Lebanese, Korean, and Indian) use sweet potatoes in their cuisine. Since the USDA survey in 1996, fresh-market use of sweet potatoes has likely increased in full-service restaurants from the 3 percent indicated at that time, with recent introductions of sweet potato sides on menus.

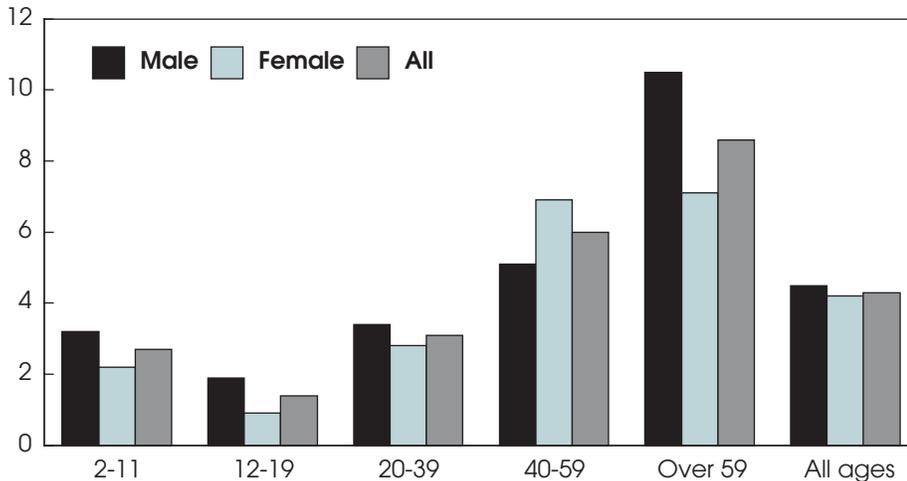
Sweet potatoes are most popular in the South, where the majority are produced. As defined by the Census, the South is the largest region, accounting for 35 percent of the nation's population, 42 percent of fresh-market sweet potato consumption, and 54 percent of processed consumption. Per capita use of all sweet potatoes in the South was estimated to be 5.7 pounds in 2001, followed by the Midwest (4.3 pounds), and the Northeast (3.9 pounds). Those in the West eat the fewest sweet potatoes (2.6 pounds), with processed products amounting to 0.8 pounds.

Consumption figures from the USDA food-intake survey revealed that Black consumers exhibit a greater preference for sweet potatoes than other consumers—an estimated 7.4 pounds per person in 2001 (4.2 pounds processed and 3.2 pounds fresh). Black consumers, who make up 13 percent of the U.S. population, accounted for 21 percent of sweet potato consumption—about 70 percent greater than the U.S. average. This may largely explain the higher consumption in the South, since Census data also indicate that more than 50 percent of Blacks reside there.

Whites (non-Hispanic) consumed slightly more fresh sweet potatoes (3 pounds) than the national average (2.9 pounds), but consumed proportionately fewer processed sweet potatoes (1.1 pounds) than the average (1.4 pounds). Among Hispanics, Puerto Ricans were found to consume more than 7 pounds per person, with part of their supply imported from the Dominican Republic.

Sweet Potato Consumption Rises with Age

Lbs. per person



ERS fresh utilization for 2001 derived by ERS from 1994-96 *Continuing Survey of Food Intake by Individuals*.

Economic Research Service, USDA

Middle-income consumers appear to favor sweet potatoes most. Households with incomes between 131 percent and 350 percent above the poverty level (the cutoff point for food stamp eligibility is 130 percent of the poverty level) represent 42 percent of the U.S. population, but consume 47 percent of all sweet potatoes. When looking at the fresh market, both middle- and upper-income consumers reported eating proportionately more than their population shares. For processed products, middle- and lower-income consumers reported consuming more than

their respective population shares, while the upper-income group consumed substantially less.

In the aggregate, sweet potato consumption is relatively similar among males and females with males (4.5 pounds) eating slightly more per capita than females (4.2 pounds). In general, consumption (largely of processed products) starts strong with children under 12 years of age, likely reflecting use of baby food and sweet candied products. Use then declines

sharply as children reach their teens, with teenage girls eating less than 1 pound per capita. Consumption then begins to pick up as people reach adulthood, with per capita consumption more than doubling for females aged 20-39 (2.8 pounds) and 40-59 (6.9 pounds). Males 60 years of age and older account for 7 percent of the population but consume 16 percent of all sweet potatoes—the equivalent of 10.5 pounds per person in 2001 and the highest among all age groups. Females in this age group were the second strongest consumers, with the equivalent of 7.1 pounds per person. This suggests that a taste for sweet potatoes may be acquired with maturity.

Based on production and use data, it appears that U.S. sweet potato demand has stabilized during the past decade and may be poised for growth. Substantial promotional efforts made by national and state industry associations likely played a role in stemming the long-term declining trends in per capita use. However, it seems clear that further concentrated effort will be required to coax the highly nutritious sweet potato out of the holiday shadow and into everyday life. **AO**

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Recent Growth Patterns in the U.S. Organic Foods Market

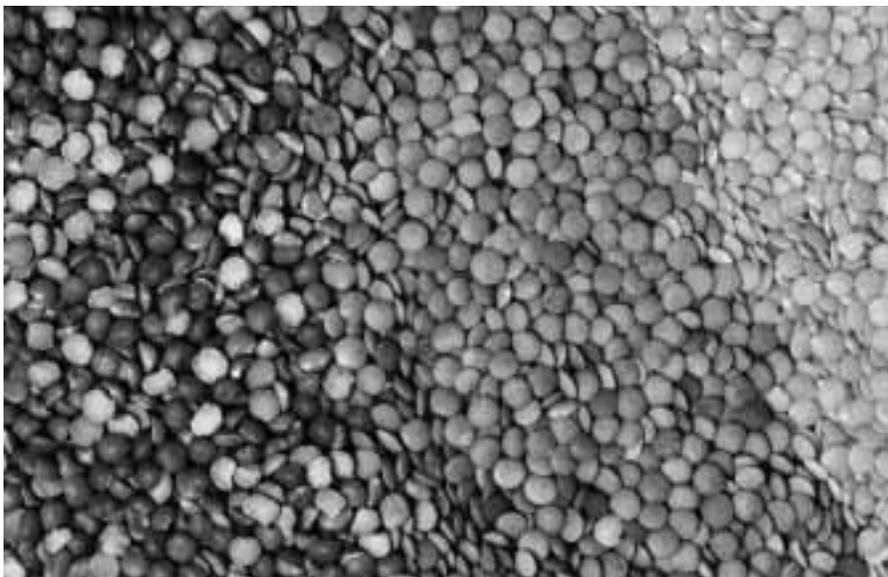


A new report from USDA's Economic Research Service

Once they were relegated to a niche market and sold in a limited number of retail outlets. Today, organic foods are turning up in conventional supermarkets, farmers' markets, and club stores, as well as in natural product retail outlets. A new ERS report summarizes growth patterns in the U.S. organic sector in recent years and traces the market channels for major commodity groups. Also addressed: research, regulatory, and other USDA programs on organic agriculture.

On the Economic Research Service website
www.ers.usda.gov/publications/aib777/

Commodity Spotlight



Will the Farm Act Get Pulses Racing?

Dry peas, lentils, and small chickpeas—pulse crops—are relatively minor in acreage, supply, and use in the U.S. compared with corn, soybeans, and wheat. However, pulses could be poised for expansion due to their inclusion in the 2002 Farm Act. New marketing loan benefits, combined with agronomic advantages and a growing number of processors, may increase the attractiveness of planting pulse crops, particularly in the Northern Great Plains. Accommodating increased supply is likely to hinge on expanding current markets and creating new ones.

Location, Location...

In the U.S., dry peas and lentils have traditionally been produced in the Palouse, an area centered along the borders of eastern Washington, northern Idaho, and northeast Oregon. Chickpeas, on the other hand, have long been grown in California. Since the mid-1990s, acreage of all 3 crops has expanded to the Northern Great Plains, with North Dakota emerging as the region's leader.

Most dry peas grown in the U.S. are green, but yellow pea acreage increased 12-fold between 1993 and 2001. Harvested acreage of green peas and lentils has

trended upward slightly over time. Chickpea acreage has soared since the late 1980s, reaching 128,000 in 2001.

The relatively flat terrain of the Northern Great Plains is more conducive to large-scale pulse production than the steep hills and valleys of the Palouse. Pulse production in the Pacific Northwest requires specialized harvesting equipment, while farmers in the Northern Great Plains use standard equipment (the same machinery as for cereal grains) to harvest their crops, giving them a cost advantage over growers in the Palouse. Abundance of relatively inexpensive land in the Northern Great Plains compared with the Pacific Northwest is another factor in the rapid expansion

Small Chickpeas: How Small?

Small chickpeas are defined as those that drop through a 20/64 screen. Both the desi and kabuli types can meet this definition. Desi chickpeas are naturally small, but the kabuli type is generally larger. Kabuli chickpeas may fall through the sieve if they are small-sized varieties or have been affected by adverse weather and/or agronomic conditions.

of pulse production in the Northern Great Plains.

The two regions differ somewhat in the pest problems they face. Pulse production in the Palouse may be affected by insect pests, fungi, and diseases. While farmers in the Northern Great Plains typically do not experience severe insect infestations, they deal with more severe fungi and disease problems than do farmers in the Palouse. However, this situation may change if aphid and lygus bug infestations become more severe and economically costly in the Northern Great Plains.

One of the primary problems affecting pulse crops is aschochyta blight, a lesion-causing fungus that devastates chickpeas and severely damages lentils. Peas may be afflicted by powdery mildew, which stunts growth and affects seed yield and quality, and by fusarium wilt, which results in seed decay and collapse of the plant from rotting roots. Lentils can be adversely affected by powdery mildew as well as by sclerotinia white mold.

Lack of commercial pesticides makes pest control difficult. In the past, chemical companies did not register their products for these crops with regulatory authorities due to the high research and development costs and the relatively small sales compared with other field crops. In crop protection, there are two types of approval for chemical usage: full-label and Section 18. Full-label products are granted complete approval, and sales are unrestricted. Section 18 approval allows the U.S. Environmental Protection Agency to permit emergency use of unregistered pesticides for a temporary period of time—usually one growing season—under special circumstances, such as disease, heavy pest pressures, or ineffectiveness of other products. Producers will have more pest control options as chemical companies register their products for pulses.

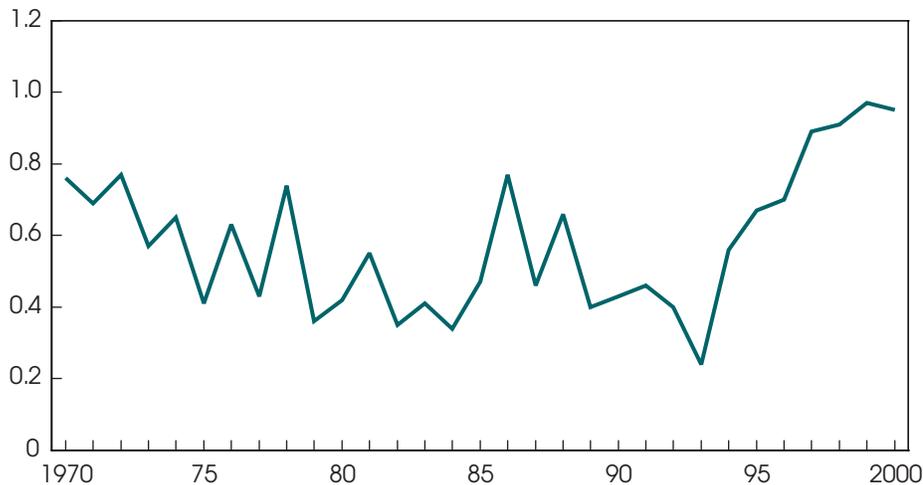
Marketing at Home & Abroad

The USA Dry Pea and Lentil Council (USADPLC), an industry group, is the primary organization promoting dry peas, lentils, and chickpeas. The USADPLC emphasizes premium quality, and thus, most U.S. pulses are channeled to food use (domestic and export). Current studies

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U.S. Dry Pea and Lentil Consumption Has Grown Rapidly Since Early 1990s

Lbs. per capita



Economic Research Service, USDA

conducted by USDA's Agricultural Research Service and land-grant universities on dry peas and lentils are focusing on increasing yields, multiple disease resistance, sustainability and agronomic adaptation, seed shape and color, and cooking characteristics. For chickpeas, these organizations are working to increase resistance to aschochyta blight and to develop a large seed. In some markets, such as in India, price premiums are paid for larger seeds. State trade associations are also involved in marketing and research.

Low prices in the domestic and world markets (relative to U.S. production costs) have limited pulse production in the U.S. Also dampening production prior to 2002 was uncertainty over benefits relative to other crops that receive government payments—the marketing loan gains and loan deficiency payments that shield growers from substantial price risk. Thus, many producers opted for program crops with marketing loans, and grew pulses only when they were agronomically beneficial.

Virtually all pulses are marketed through processors. Pulses are sold to processors who clean, sort, and grade them. Processors decorticate (shell) lentils and split peas for the domestic market, but exports are usually cleaned only. Chickpeas are not typically split.

A portion of production is grown under contract, but over 80 percent is sold in the spot market. Contracts usually specify both quantity and price. Processors may contract with growers to ensure that they fulfill their own contracts with food manufacturers. In many cases, growers sell their crops to the processors that sold them seed. Longstanding relationships have developed between producers and processors, since the number of processors is relatively small.

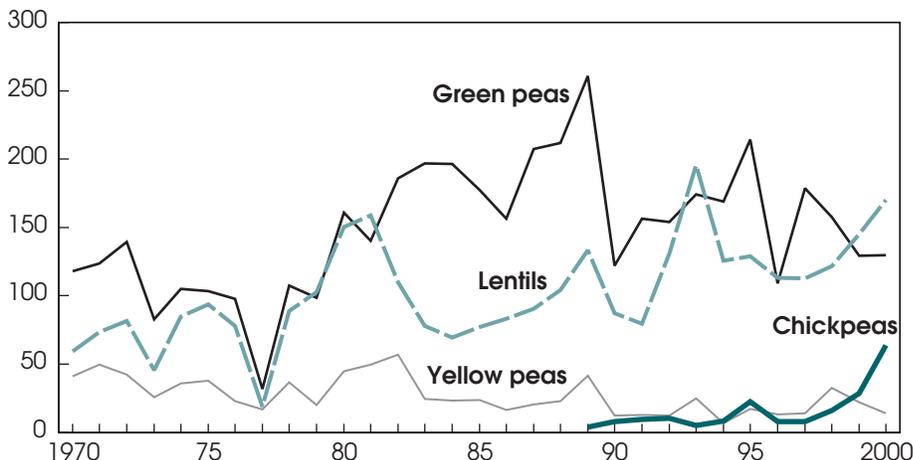
Domestic pulse prices are based on USDA grading standards. While prices are discounted for lower quality, premiums are sometimes paid for quality superior to the U.S. No. 1 grade (e.g., Spanish-quality lentils and high-quality green peas). Some processors believe that the quality of pulse crops in the Palouse is more consistent than in the Northern Great Plains.

Processors base payments to producers, in part, on processor margins and world prices. In the case of dry peas, U.S. prices are greatly affected by Canadian supply. Canada is the world's largest producer of dry peas, and Canadian infrastructure keeps shipping costs relatively low. Canadian dry peas are transported by rail to export ports in bulk quantities, and the newer and larger port facilities have invested in high-speed equipment that loads product directly onto ocean vessels without damage.

Prices received by U.S. lentil growers depend primarily on demand from India, where consumption is high and production usually falls short of use. In that country, wheat and rice are more attractive because they are higher yielding and more profitable than pulses. The Indian government also offers procurement programs and higher support prices for wheat and rice. Exportable supplies from major

U.S. Expanding Chickpea and Lentil Exports

Million lbs.



Source: Global Agricultural Trade System, Foreign Agricultural Service, USDA. Economic Research Service, USDA

Commodity Spotlight

Pulses Add Nitrogen to the Mix

Dry peas, lentils, and small chickpeas fall within the general category of “pulse crops,” which are members of the *leguminosae* (pea) family. The ability to fix nitrogen in the soil reduces the need for fertilizers. For this reason, pulses are generally grown in rotation with other crops.

Specifically, bacteria in the soil called rhizobia infect the roots and form nodules that take gaseous nitrogen from the air and convert it into a form plants can use. Pulses have a high nitrogen requirement, and inoculants are often used to increase the rhizobia population in the soil and aid the nitrogen fixation process. Inoculants may be used to treat either the seed or the soil. Granular-based inoculants are costly but popular, due to their ease of use.

competitors (Australian and Canadian) also affect U.S. lentil prices.

Domestic chickpea prices depend on conditions in major foreign markets such as Turkey and Mexico. Stiffening global competition and larger domestic supply have led to declining U.S. pulse prices.

Dry peas, lentils and chickpeas are branded by processors in the Palouse, but not in the Northern Great Plains where the industry is still developing. Product branding will likely appear in North Dakota in the near future. Processors use brand names and logos to invoke images of quality and instill loyalty among customers. In most instances, one brand covers several different kinds of pulses. Some processors use different brand names to indicate various quality levels. Several firms use different product lines for domestic and export markets.

U.S. domestic food use of dry peas, lentils, and chickpeas is small, with pulses sold mainly to food manufacturers (e.g., soup makers) and bagged for sale in grocery stores. U.S. per capita dry pea and lentil consumption (all uses) has remained below 1 pound annually for three decades. While per capita consumption declined for many years, it rose rapidly in the latter half of the 1990s as output expanded in the Northern Great Plains, although it is unclear whether the additional supply was used for human consumption or for feed.

In recent years, 47 percent of dry pea and lentil production was exported for feed and food uses, including U.S. food aid. Export shipments of yellow peas and chickpeas were significantly smaller. In 2001, a large portion of dry pea exports

was shipped to the Philippines, the European Union (EU), Canada, and India. The EU uses dry peas for animal feed, while Canada is strictly a pass-through market, with U.S. shipments continuing on to other countries. In 2001, the U.S. exported most of its lentils to the EU and African countries. The primary markets for larger, U.S. kabuli chickpeas are India, Canada, and the EU (especially Spain). USDA's Commodity Credit Corporation (CCC) is a substantial purchaser of pulses. The CCC obtains commodities from processors and then ships them as food aid (particularly to African nations).

The USADPLC is attempting to expand sales of high-quality U.S. products (particularly lentils and canned peas) in the EU. Following successful efforts in Spain, the organization is focusing on Italy, Germany, and France. The association is also marketing food-grade peas and value-added items (snacks and canned peas) in Southeast Asia, especially the Philippines and Indonesia.

Feed peas are also being promoted in Southeast Asia and China, where they are used to manufacture starch. In addition, the USADPLC is taking steps to promote high-quality, branded U.S. products (such as chickpeas) in the Middle East and North Africa to meet demands of the rising middle class in those regions.

Most processors export through brokers rather than directly, as brokers typically have many contacts and specialize in certain markets. In addition, brokers are knowledgeable about designing contracts and have the financial capability to absorb risks (e.g., currency fluctuations and default). In certain instances, large proces-

sors export directly, usually to low-risk countries such as Europe and, to a lesser extent, Asia.

Due to its relatively high pulse prices, the U.S. is at a disadvantage in the world market. The price levels are primarily the result of four factors:

- U.S. pulses are high-quality commodities, commanding price premiums. Many price-sensitive segments of foreign markets are unwilling to pay significant premiums for U.S. quality, especially when lower cost pulses from other countries are plentiful. For example, India imports many of its pulses from Burma, Canada, and Australia, where both prices and quality are lower than in the U.S.
- U.S. transportation costs are relatively high. Long distances cause high trucking costs, particularly in the Northern Great Plains. Rail rates to ports are also high.
- U.S. exporters bag and containerize shipments in order to maintain quality. While this results in less product damage, the process is more costly than bulk shipping.
- The high value of the U.S. dollar relative to other currencies makes U.S. exports more expensive than those from other countries.

The U.S. competitive position is also affected by the relatively small acreage planted to dry peas, lentils, and chickpeas. This makes it difficult for the U.S. to consistently produce enough pulses to supply countries that could rely on them as a primary source of protein (e.g., India) or animal feed.

New Marketing Loan Programs: How Much Impact?

The new marketing loan programs in the 2002 Farm Act mark the first time that pulse growers can receive farm program benefits if prices are low. Supporters expected these programs to help stabilize producer revenue, expand existing markets, and develop new ones. During the 2002/03 and 2003/04 crop years, loan

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rates are set at \$6.33 per cwt for dry peas, \$11.94 per cwt for lentils, and \$7.56 per cwt for small chickpeas. Loan rates will average about \$0.12 per cwt lower in the 2004/05-2007/08 crop years.

USDA's Farm Service Agency announced that the loan rates and repayment rates for these pulse crops will reflect U.S. No. 1 grade quality. However, discounts will be applied to both loan and repayment rates for grades of lower quality that are placed under loan. All grades of a particular commodity will be eligible for a marketing loan benefit payment equal to the difference between the commodity's national loan rate and repayment rate, thereby providing producers protection from low prices.

Despite the promise of marketing loan benefits to producers, acreage planted to lentils and chickpeas fell in 2002. At planting time, the 2002 Farm Act had not been passed, and pulse farmers apparently responded to low commodity prices rather than potential marketing loans. In contrast, dry pea acreage rose in 2002, due mainly to higher market prices.

This year's drought seems to have resulted in lower yields and some quality loss in the Northern Great Plains. However, damage to the Canadian crop is much more severe.

Will the new Farm Act significantly boost acreage? The incentive to plant dry peas, lentils, and small chickpeas would have

been higher if repayment rates had been based on U.S. No. 3 grade quality. Reduced price risk may encourage planting. High wheat prices will also likely discourage pulse plantings in 2003. Even with marketing loans, planting flexibility restrictions will limit the impact on small chickpea acreage.

Factors in addition to the Farm Act provisions will come into play when considering the future of the industry. Given relatively small domestic food use, other markets need to be developed and/or expanded in order to accommodate any increases in supply. Many processors and industry representatives believe that a significant increase in domestic pulse consumption is unlikely without the introduction of new food products. Potential avenues being investigated include value-added processing, which could help the development of such products as snacks, bread, noodles, and precooked/dehydrated products.

Research has shown that dry peas can be used successfully in feed rations, providing sufficient energy and protein. However, their relatively high price, combined with significant transportation costs from production regions to feed-deficit areas, make peas less attractive than corn and soybean meal. Feed use could be an enormous market if pea production expands and transportation infrastructure improves to the point where their delivered prices are competitive with other feed inputs. The U.S. industry is taking steps to develop new markets overseas with value-

added products and the inclusion of peas in feed rations in Asian countries.

Domestic transportation infrastructure has been a constraint, particularly in the Northern Great Plains. High transportation costs may hinder market expansion unless the situation improves.

Processors, exporters, and industry representatives generally agree that if production of these commodities does expand, it will likely occur in the Northern Great Plains rather than in the Palouse, because of greater land availability, lower land costs, and flatter terrain. While production outside this region is possible, expansion will likely be constrained by the fact that pulses are cool-season crops. Pulse acreage may increase in Nebraska, eastern Montana, Colorado, and Wyoming, while Arizona and New Mexico could see greater acreage planted to chickpeas.

Differences in the qualities produced may aid the industry's expansion. Producers in the Palouse foresee the market for these pulse crops becoming segmented, with the Palouse supplying premium grades and the Northern Great Plains producing feed-quality and lower quality food-grade pulses. A dedicated supply of lower grade pulses may increase the feasibility of a feed-pea market as well as boost the competitiveness of U.S. exports in the world market. **AO**

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Farmland Protection: The Role of Public Preferences for *Rural Amenities*

A new report in November from USDA's Economic Research Service

Watch for it on the web at www.ers.usda.gov/publications

World Agriculture & Trade



Nancy Cochran

EU Enlargement: The End Game Begins

Ten Central and East European (CEE) countries are engaged in intense negotiations with the European Union (EU) for eventual membership. The official position of the EU is that 8 of the 10 will be ready to join in 2004—Poland, Hungary, the Czech Republic, Slovakia, Slovenia, Estonia, Latvia, and Lithuania. Two others—Bulgaria and Romania—are farther behind in their preparations and are not expected to be ready for membership until 2008.

In December 2000, EU heads-of-state drafted the Treaty of Nice to adapt EU institutions to the increased political complexities of a Union of 27 rather than 15. In October 2002, Ireland became the last current EU member to ratify the treaty, removing the final legal obstacle to enlargement.

Accession could bring significant changes in the structure of agricultural production and trade for the CEEs themselves, including large increases in output of feedgrains, beef, and poultry. Impacts on world trade are likely to be small, but enlargement could alter the mix of U.S. exports to the region. U.S. grain exports to the CEEs have already fallen almost to zero as their livestock sectors have declined, so enlargement would have little

impact on that market. But the U.S. could lose much of the large poultry market as CEEs adopt specific EU sanitary requirements. At the same time, a rise in CEE incomes as a result of EU membership could create opportunities for larger exports of other high-value products.

The Enlargement Timetable: Can It Be Met?

Some key issues need to be resolved before the CEEs can join the EU, and it is not at all certain that all eight will be ready to join by 2004. If the CEEs are to meet that deadline, all negotiations must be completed before the Copenhagen Summit on December 13, 2002. At that summit, the EU will officially decide which candidates are eligible to join and will invite those candidates to begin the ratification process. For candidates not meeting the December deadline, accession could be delayed indefinitely.

In 30 policy areas, known as *chapters*, the EU and the candidate countries must reach agreement before they can be invited to join. These chapters cover areas such as free movement of capital and labor, judicial institutions, transportation, fisheries, regional policies, industrial policy, taxation, and agriculture. Most of the

chapters are now closed (meaning the EU and the candidate countries have reached an agreement on the issues.)

For most of the candidates, the only remaining chapters to be completed are agriculture, competition, and budget and finance. The competition chapter mainly concerns national-level programs providing tax breaks and other assistance to foreign investors, and officials in the candidate countries do not expect this to be much of a problem. The budget and finance chapter concerns new members' contributions to the EU budget and is somewhat contentious because the candidate countries want to ensure that they are not net contributors to the EU budget (i.e., that they not pay in more than they benefit).

The agriculture chapter is the most difficult of the open chapters, and there are serious issues to be resolved before it is closed. There are two subchapters: one concerning veterinary, sanitary, and phytosanitary issues, the other concerning direct government payments to producers. Many of the candidates have completed negotiations on the first subchapter and have won transition periods for the requirements that are most difficult to satisfy.

But a far more contentious issue is the level and timetable over which the direct payments currently enjoyed by farmers in the EU will be extended to farmers in the new member countries (*AO* October 2002). The EU, concerned about the budget impact of enlargement, is proposing to phase in these payments over 10 years, starting with 25 percent in the first year after accession. CEEs have refused so far to accept such a proposal, insisting on equal treatment. The outcome of these negotiations will have some effect on levels of agricultural output but an even greater impact on the eventual structure of agriculture in the new member countries.

A related issue is whether new members will be allowed to maintain national-level policies. In the current EU there are no national support programs, only one common agricultural policy. But some candidate countries, such as Hungary and Poland, provide significant levels of both market price support and a variety of investment aids and direct income support. If CEE farmers lose the support they

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now enjoy and then get only 25 percent of the support currently going to EU farmers, the result could be a significant loss in net income for some CEE farmers. The consensus that seems to be emerging is that CEE governments will be allowed to continue levels of national support necessary to keep their farmers on a par with farmers in the current EU-15.

Enlargement Will Change Some Commodity Markets

USDA's Economic Research Service (ERS) analyzed the potential impact of enlargement on commodity markets in CEE countries, assuming no change in EU agricultural policy from the Agenda 2000 agreement. The analysis focused on the three largest agricultural producers among the eight CEEs expecting to join in the first wave—Poland, Hungary, and the Czech Republic. The analysis used a partial equilibrium model known as ESIM.

In the early 1990s, producer prices in the CEEs for most commodities were substantially below those in the EU. Researchers therefore concluded that accession could lead to enormous increases in CEE output of both crop and livestock products. In recent years, however, there has been considerable convergence between CEE and EU prices. Of particular interest in observing relative prices in 2000:

- Wheat prices in Poland and Hungary were above the EU intervention price. The Czech wheat price was only marginally below the EU price.
- Corn prices in Poland and the Czech republic were above the EU price. The Hungarian price was slightly below.
- Rye prices, on the other hand, were still substantially below the EU intervention price.
- Pork prices were nearly the same in the CEEs and the EU.
- CEE beef and poultry prices remained substantially below the EU price.

Two of the most important reasons for this convergence are changes in exchange rates and the intervention policies pursued by the CEEs. Since 2000, Polish, Czech, and Hungarian currencies have appreciat-

ed against the euro. In addition, in an effort to align their policies with those of the EU, the CEEs have intervened strongly in some markets, particularly grain.

A third reason is quality, which is particularly important for pork. Prices used for comparison were prices paid for the top grade of the EU grading system. The grading system evaluates carcasses mainly in terms of lean meat content. In the three CEE countries, the average lean meat content has been increasing, and an increasingly higher share of pork meets the top three grades of the EU grading system. This trend is the result of a steady trend towards consolidation in the meat industry and investment support provided by CEE governments (see AO, January 2002 for more discussion).

Following are highlights of the potential impacts of the three countries' membership in the EU as indicated by ERS analysis:

- CEE wheat output declines in Poland and Hungary. Production rises slightly in the Czech Republic, but total output for the three declines. Total wheat output for the 18 EU member countries declines, and net exports decline.
- Output of barley and rye increases in all three CEEs. The three remain net importers of barley, but the combined imports of these crops decline. The three produce large surpluses of rye, adding to already high EU intervention stocks.
- CEE pork output and consumption change little.
- CEE beef output rises, but, because most CEE cattle are dual purpose dairy/beef animals, output rises are constrained by the EU dairy production

quota. Even so, consumption falls drastically as prices rise, leading to higher net exports.

- CEE poultry output and net exports rise.
- Output and consumption of oilseeds change little.

Direct Payments: EU & CEE Proposals

Two sets of direct payments were considered in the ERS analysis:

- For arable crops—i.e., grains and oilseeds—EU producers receive a per hectare payment calculated as a per ton amount multiplied by a so-called reference yield. These were introduced in the 1992 Common Agricultural Policy (CAP) reform as “compensation payments” intended to compensate EU producers for cuts in support prices that came with the reform. The reference yield is defined for each region based on historical average yields for that region. These payments are also subject to a regional area ceiling, again based on recent historical averages.
- There are a variety of payments for beef cattle: a suckler calf premium, paid twice yearly for each calf, and a premium for bulls and steers, paid twice in a lifetime. There is also a slaughter premium paid per animal at slaughter. All these premia are limited by regional herd ceilings based on historical averages and limits on stocking density (number of animal units per hectare.)

The payments were intended to be decoupled from production decisions, but in fact, most analysts agree they are only partially decoupled, in that farmers must

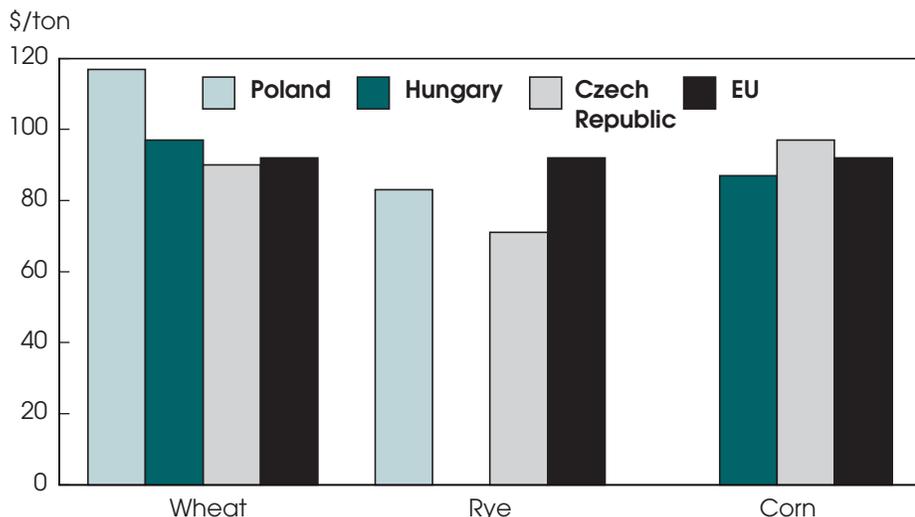
EU and Candidate Country Proposals Would Differ In Impacts on Farm Income

Country	EU proposal		Candidate countries' proposals	
	2006/07	2013/14	2006/07	2013/14
<i>Farm payments: euros per hectare</i>				
Poland	65.62	187.49	228.66	228.66
Hungary	94.44	269.83	319.23	319.23
Czech Republic	92.67	264.76	266.03	266.03

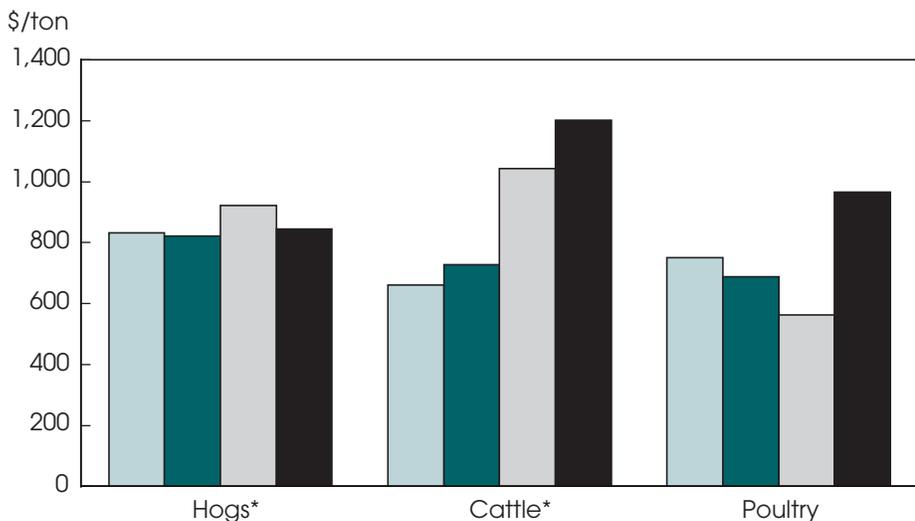
Exchange rate is currently about 1 euro to 1 U.S. dollar.
Source: ERS calculations based on official EU and candidate country proposals.
Economic Research Service, USDA

World Agriculture & Trade

In 2000, CEE and EU Prices for Most Major Grains Were Converging. . .



. . .but CEE Cattle and Poultry Prices Were Still Substantially Lower



*Live weight.

Economic Research Service, USDA

be operating their farms in order to receive the payments.

The EU Commission has been concerned about the cost of extending the full range of these payments to producers in the new member countries. In light of that concern, the Commission on January 30, 2002 issued its formal position regarding direct payments. The proposal calls for a 10-year transition period before CEE producers are eligible for the full range of direct payments enjoyed by current EU

members. CEE producers will receive only 25 percent of the payments in the first year following accession, gradually increasing to 100 percent by the 10th year.

The CEE candidates have so far refused to agree to such a transition period, arguing that the single-market competition rules require equal treatment. They claim this will relegate CEE farmers to permanent second-class status, and that it will be impossible to compete with EU pro-

ducers who receive greater income support. The EU Commission, in turn, contends that extending 100 percent of the payments to CEE producers in the first year following accession would slow down the restructuring of CEE agriculture that the Commission believes is essential if the new members are to be competitive in the single market.

A related issue under negotiation is the level at which the various supply controls under the CAP will be set for the new members. One set of supply controls involves the ceilings at which the direct payments will be capped. The other concerns national production quotas for milk and sugar. The EU has proposed to set these ceilings at the 1995-99 average area, yield, and herd levels. The candidates have all requested higher ceilings.

For each commodity, the candidates are requesting limits close to what they view as their potential. In most cases these are levels achieved in the 1980s during the Communist era. Since those levels were achieved in a system of high subsidies and distorted output prices, it is not clear that in a free market such levels would be economically feasible.

In fact, ERS analysis suggests that the differing positions on direct payments will not have a great impact on production. Two scenarios illustrate the results for Poland.

- Scenario 1 is the EU proposal: a 10-year phase-in with ceilings based on 1995-99 averages; Polish farmers receive 25 percent of payments the first year after accession.
- Scenario 2 represents the Polish request: Polish farmers receive 100 percent of the payments in the first year following accession, and ceilings are set at the levels requested by the Poles.

The results suggest that, for the most part, these differing positions would not greatly affect output of arable crops and meat. However, the dairy quota could make a larger difference. Poland currently produces over 12 million tons of milk per year. The EU proposal would entail a significant decline in Polish milk output.

World Agriculture & Trade

Results are similar for Hungary and the Czech Republic.

However, the two proposals would have greater implications for farm income. Changes in farm income will be more serious if the candidate countries are forced to give up national support policies. One Polish expert estimated that if these policies are cancelled and Polish wheat producers do not receive full direct payments, their revenue could fall by 30 percent. Declining farm income, coupled with strict EU quality, sanitary, and veterinary regulations, could force many small producers to leave farming.

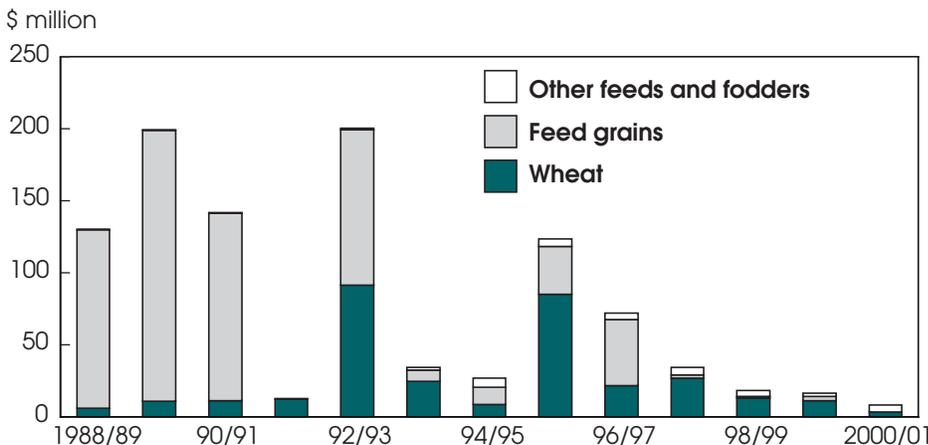
The EU proposes to offset the lower payments with increased funding for rural development through the Structural Funds, a program that already exists for funding development in disadvantaged regions in the current EU. The hope is that these funds will generate nonagricultural employment in rural areas, absorbing the labor forced out of agriculture.

U.S. Trade with an Enlarged EU

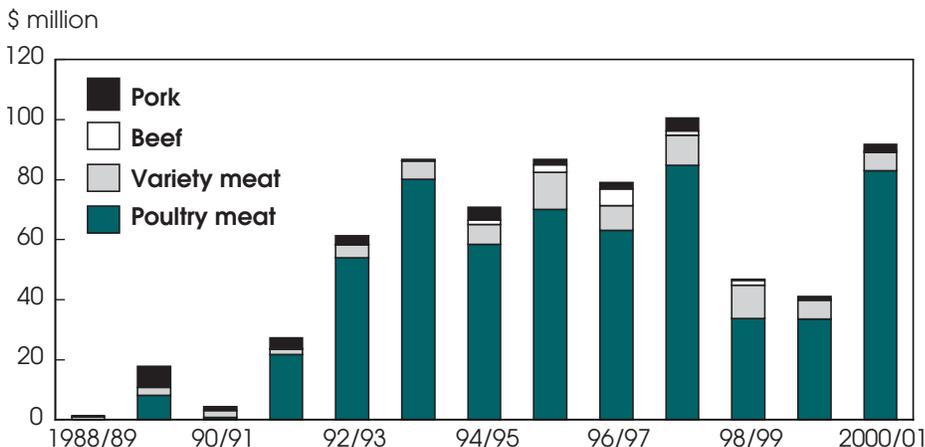
The transition of the CEEs toward a market economy has already brought about significant changes in U.S. exports to the CEEs, and EU enlargement could bring further changes. In the late 1980s, the principal products exported to the region were wheat, corn, and soybeans. As the region's livestock sectors declined, demand for these products fell off and U.S. exports of these commodities to the region dropped sharply. However, there was also a significant increase during the last decade in U.S. poultry exports to the region, principally to Poland and the Baltic States. Enlargement is likely to have little impact on U.S. grain exports to the CEEs, but the U.S. could lose much of the poultry market.

Declining feed demand is not the only reason for declining demand for U.S. grain. U.S. corn exports have also been affected by zero tolerance for ragweed seed on the part of Poland and Bulgaria. U.S. wheat exports have been undercut by low-priced Black Sea wheat—primarily from Russia and Ukraine, and to a lesser extent from Bulgaria and Romania.

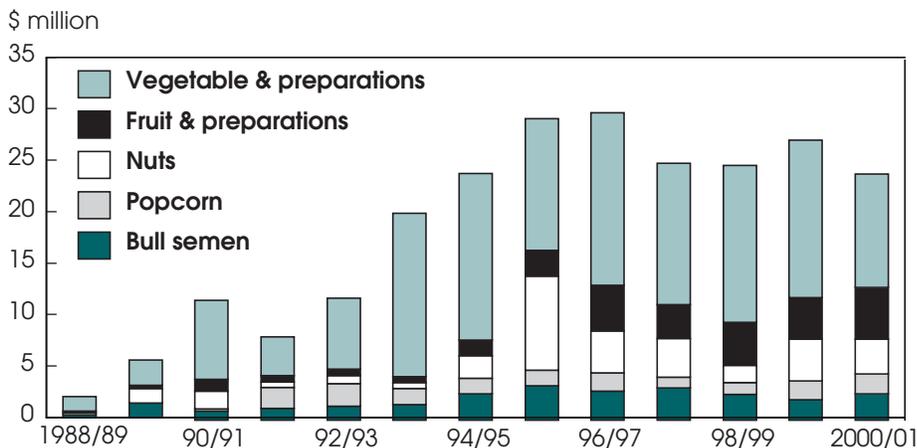
U.S. Grain Exports to the CEEs Have Dwindled. . .



. . .but U.S. Poultry Exports Increased in the 1990s. . .



. . .as Have Shipments of Other High-Value Products



CEE=Central and East European countries.

Economic Research Service, USDA

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Upon accession, the candidate countries will be required to give up their ban on ragweed seed, since the EU does not maintain a zero-tolerance policy. However, all EU restrictions on genetically modified corn will apply, and CEE corn output will also likely rise, thus reducing demand for imported corn. According to ERS analysis, CEE and EU net wheat imports could rise slightly with an enlarged EU. But it is likely that this demand will be met by Black Sea rather than U.S. wheat.

The U.S. poultry market in the CEEs was worth \$83 million in fiscal year 2001. The EU currently bans all U.S. poultry meat because of a ban on treating carcasses with chlorine. Unless the issue is resolved, all acceding CEE countries will also ban U.S. poultry upon accession. Transshipments through Poland and the Baltic countries to Russia would be allowed to continue.

However, other markets could expand after accession. During the past decade, the U.S. has expanded exports of a number of high-value products. Products that bear watching include pet foods and snack

foods, especially raisins, popcorn, and nuts. To the extent that EU accession generates higher incomes for the CEE populations, demand for these and other processed and packaged foods could rise.

Prospects for U.S. exports also depend on developments in the CEE livestock sectors. Any rise in CEE livestock output could increase demand for soybeans and other nongrain feeds. The U.S. has also developed a market for animal genetics—baby chicks, bull semen, and cattle embryos—in the region. The principal customer for these products so far has been Hungary, but if accession stimulates greater poultry output and the development of specialized beef herds, demand for such products could rise in other CEE countries.

Such promising developments can come about only if accession results in higher incomes for the CEE populations. Any potential for rising income depends in turn on creation of new and higher paying jobs in the region. Unemployment is already high in some of the candidate countries—reaching 18 percent in Poland in 2001. Accession will almost certainly decrease agricultural work in countries

such as Poland, particularly if the EU prevails on the issue of direct payments. Whether this labor can be absorbed by other sectors is an open question.

Next Few Months Are Critical

The December Copenhagen Summit will decide which candidates are ready for EU membership. The accession treaties will be signed in March. After that, the treaties must be ratified by EU member states, and each candidate will hold a referendum.

The outcome of the ratification process is by no means guaranteed. Some member states have serious doubts about the benefits of enlargement. Likewise, there is serious opposition to EU membership in some of the candidate countries—Poland's farmers are strongly opposed, and there is considerable ambivalence in the three Baltic countries. To a large extent, the outcome of referendums in the candidate countries will depend on the results of the ongoing agricultural negotiation. **AO**

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2002
CENSUS OF
AGRICULTURE

The Census of Agriculture is Coming

The 2002 Census of Agriculture will appear in farmers' and ranchers' mailboxes in late December. Response is due February 3, 2003.

The census will provide the official facts representing all U.S. producers and commodities.

Data will be released at www.usda.gov/nass/ on February 3, 2004.

AGRICULTURE COUNTS!



United States Department of Agriculture



National Agricultural Statistics Service

World Agriculture & Trade



Fred Gale

China's Increasing Presence In the Global Trade Of Vegetables & Fruits

China raised its profile in the global market for vegetables and fruits in the 1990s. As one of the world's top exporters of vegetables and fruits, China increased its export value of those products from \$2.3 billion to \$3.1 billion between 1992-94 and 1998-2000, a rise of 33 percent. With improvements in production, marketing, and transportation technologies, China has strengthened its competitive position in the world market, particularly for vegetables. Though a relatively low-volume importer, China also expanded its import value of vegetables and fruits more than fourfold to reach \$413 million during the same period.

A Large Net Exporter

During 1998-2000, China's exports ranked eighth in world exports of vegetables and fruits (including pulses and tree nuts) and amounted to nearly eight times the level of imports. China had trade surpluses in all groups of fruits and vegetables, except for a relatively small deficit in fresh fruits. Processed products (canned, frozen, dehydrated) represented the largest component of China's trade surplus in vegetables and fruits.

Export composition. With the substantial growth in China's vegetable and fruit exports in the 1990s came changes in the composition of exports. The most dramatic was in juices, whose export value increased 18-fold from 1992-94 to 1998-2000 and whose share of China's total export value of vegetables and fruits increased from 0.4 to 4 percent during the same period. Export shares of other categories of vegetables and fruits changed as well, but less dramatically:

- processed products, from 60 to 64 percent of China's vegetable and fruit exports;
- fresh vegetables, from 13 to 14 percent;
- fresh fruits, no change (6 percent for both periods);
- pulses, from 14 to 8 percent; and
- tree nuts, from 7 to 5 percent.

Export markets. Asia has been the dominant destination for China's vegetable and fruit exports, accounting for 68 percent of China's overall vegetable and fruit exports during 1998-2000. The European Union (EU) was a distant second, taking 14 percent. Asia was the leading destination for all categories of China's vegetable and fruit exports: fresh fruits (75 percent), fresh vegetables (79 percent), processed vegetables and fruits (69 percent), tree nuts (65 percent), pulses (54 percent), and juices (29 percent).

While Asia is the largest export market for China's juices, its market share is comparable to those of the EU (25 percent) and the U.S. (27 percent). Expansion of China's juice exports to non-Asian countries occurred only recently and not without consequences. The dramatic surge of imported Chinese apple juice to the U.S. led to rulings in May 2000 by the U.S. Department of Commerce and U.S. International Trade Commission that the U.S. may impose antidumping duties of up to 52 percent on apple juice from China.

Import growth and sources. While China has been a major exporter in overall vegetable and fruit trade for years, it has been a minor importer. But, in the 1990s, its import growth outpaced export growth, albeit from a lower base. Fresh fruit imports have dominated China's overall imports of fruits and vegetables, increasing steadily from less than 20 percent of the total import value of fruits and vegetables in the early 1990s to more than 60 percent in 2000. As a result, China has had a small trade deficit in fresh fruits since 1998.

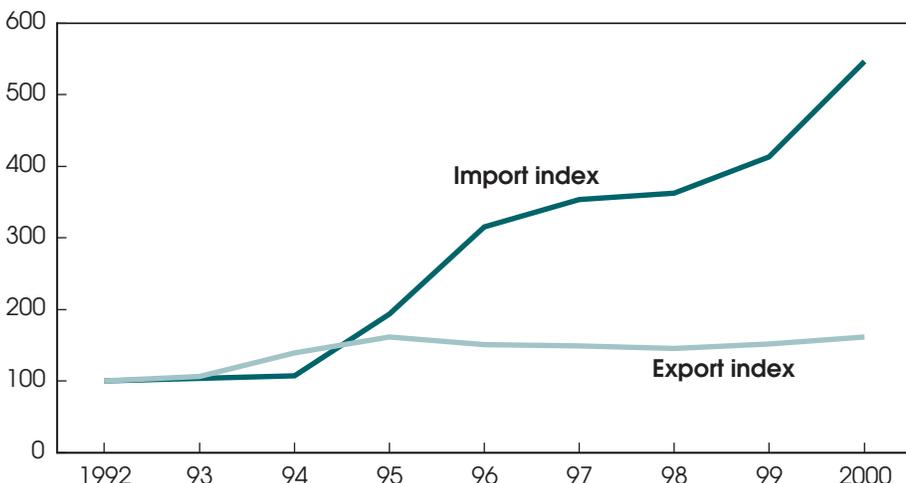
Most of these fresh fruits come from South America and Asia, which together accounted for 82 percent of China's fresh fruit imports in 1998-2000. However, anecdotal evidence suggests that a substantial amount of fresh fruit enters China via Hong Kong and is not captured in the official data.

This article draws on data from the Global Agricultural Trade System (GATS), prepared by USDA's Foreign Agricultural Service. GATS in turn uses data from the United Nations Trade Statistical Office.

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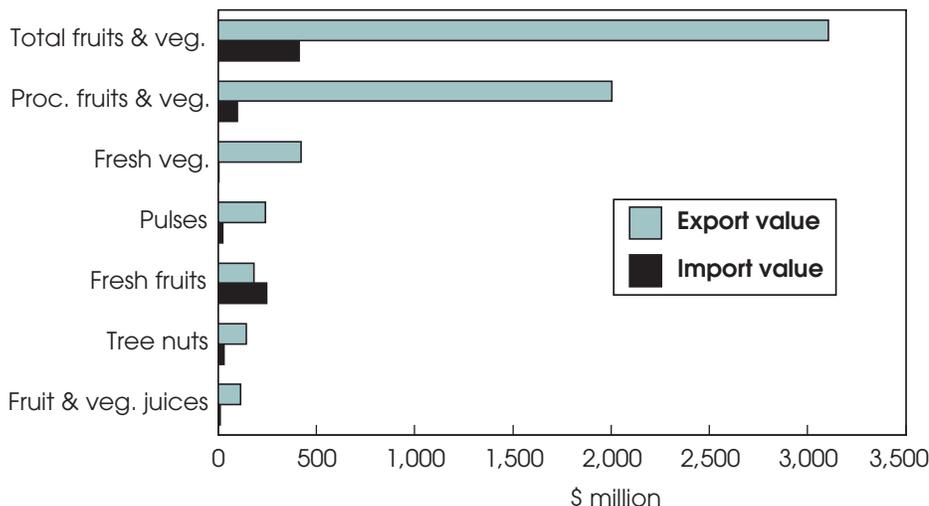
Growth in Imports Has Outpaced Exports in China's Fruit and Vegetable Trade . . .

Index (1992=100)



Index is based on value.

. . .but China Is Still A Large Net Exporter of Vegetables and Fruits



Source: Global Agricultural Trade System, Foreign Agricultural Service, USDA. Economic Research Service, USDA

Destination: Japan

The dominance of Asia in China's vegetable and fruit export market during the 1990s can be attributed largely to one country: Japan. Forty-seven percent of China's fruit and vegetable exports in 1998-2000 went to Japan, up from 38 percent in 1992-94. Meanwhile, China's exports to other Asian countries declined—from 27 to 20 percent.

Japan received 55 percent of China's processed fruit and vegetable exports and half of its fresh vegetable exports during 1998-2000. To a lesser degree, Japan is also a strong market for China's exports of other fruits and vegetables, with the notable exception of fresh fruits. Japan received only 3 percent of China's fresh fruit exports, while other Asian countries imported 72 percent.

China's advances into Japan's lucrative fruit and vegetable market challenged the market position of other suppliers, most notably the U.S. China and the U.S. have long been the two leading suppliers for Japan's overall imports of fruits and vegetables, together accounting for nearly 60 percent of the market during 1998-2000. In 1999, China displaced the U.S. as the leading supplier of fruits and vegetables to Japan. U.S. share of the Japanese market for fruit and vegetable imports declined from 32 percent during 1990-92 to 29 percent during 1998-2000, while China's share increased almost uninterruptedly from 17 percent to 30 percent during the same period.

Though China has surpassed the U.S. in overall market share in Japan's imports of vegetables and fruits, competition between the two countries is limited mainly to specific products.

In the category of *processed fruits and vegetables*, the growth of China's exports to Japan in the 1990s was largely in frozen vegetables. Japan imported a wide range of frozen vegetables from China, including legumes, spinach, and mixed vegetables. In contrast, Japan's imports of processed products from the U.S. have been concentrated in a few items. Potatoes (both frozen and other processed), sweet corn (both frozen and canned), and raisins have together accounted for more than half the value of U.S. processed products imported by Japan. A negligible portion of Japan's imports of potatoes and sweet corn came from China.

Frozen vegetables have traditionally dominated Japan's imports of U.S. processed products, and throughout the 1990s, these U.S. frozen vegetable shipments were largely prepared potatoes (mainly french fries) and sweet corn. These two vegetables accounted for 73 percent and 15 percent, respectively, of Japan's imports of U.S. frozen vegetables during 1998-2000. While China's share of Japan's import market for frozen prepared potatoes and frozen sweet corn was negligible, the U.S. was the leading supplier of Japan's imports of these two frozen vegetables, with a market share of 87 percent and 80 percent, respectively, during 1998-2000. As a result, competition between China and the U.S. in Japan's import market for

processed products in general and frozen vegetables in particular tended not to be serious.

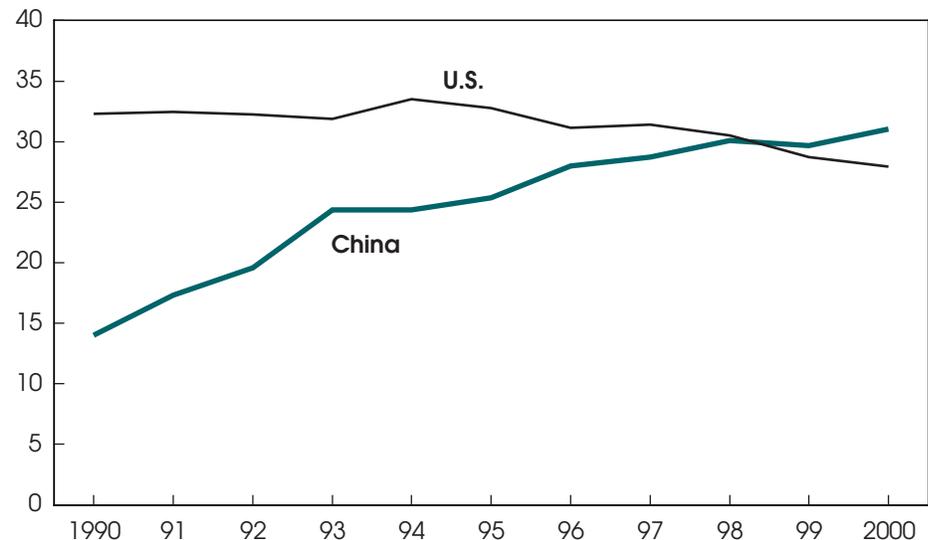
In contrast, Chinese *fresh vegetables* pose strong challenges to the U.S. in the Japanese market, though the U.S. and China export different types of fresh vegetables to Japan. During the 1990s, China substantially increased its value share in the Japanese market for fresh vegetables across the board. Notable examples of market share gains between 1990-92 and 1998-2000 are mushrooms (from 20 to 65 percent), radishes (from 3 to 76 percent), peas (from 46 to 99 percent), leeks (from 82 to 91 percent), and garlic (from 92 to 99 percent). These five accounted for 85 percent of Japan's fresh vegetable imports from China during 1998-2000.

In addition, firms operating in China increased their market share in Japan for newer fresh vegetable exports. Examples were edible brassicas, mainly broccoli and cabbages (from 2 to 11 percent), onions (from almost 0 to 16 percent), carrots and turnips (from 3 to 76 percent), and spinach (from 17 to 64 percent).

Japan's leading fresh-market vegetable imports from the U.S. during 1998-2000 were concentrated on edible brassicas, mostly broccoli; onions, including shallots; and asparagus. The U.S., like China, enlarged its market shares of these vegetables. Between 1990-92 and 1998-2000, edible brassicas from the U.S. went from an 80-percent share to 84 percent of the Japanese market; onions from 28 to 52 percent; and asparagus from 28 to 20 per-

China Has Edged Out the U.S. in Japanese Fruit and Vegetable Market

Market share (percent)



Source: Global Agricultural Trade System, Foreign Agricultural Service, USDA.
Economic Research Service, USDA

cent. For asparagus, China's very small share increased from 0.3 percent to just 1.1 percent. So, at least for two major U.S. fresh vegetable exports to Japan, China provides serious competition.

An Emerging Market for U. S. Exports

In the 1990s, China substantially increased its overall imports of fruits and vegetables—to the benefit of U.S. exporters. China's imports of fruits and vegetables from the U.S. increased from \$15.7 million in 1992-94 to \$68.9 million

in 1998-2000. Among all categories of these imports, fresh fruits grew the fastest, although the U.S. market share was relatively small. U.S. share in China's fresh fruit import market grew from less than 4 percent in 1992-94 to nearly 10 percent in 1998-2000. If bananas, China's dominant fresh fruit import, were excluded, this growth would be even more dramatic – from 8 percent to nearly 27 percent during the same periods.

Grapes, citrus fruits, and apples accounted for 98 percent of China's major fresh fruit imports from the U.S. during 1998-2000.

Destinations for China's Vegetable and Fruit Exports

Item	China exports	Destinations									
		Japan	Other Asia	Aus. & NZ	U.S.	EU	FSU	Canada	Mid. East	Others	
	<i>\$million</i>					<i>Percent</i>					
Fresh fruits	181	2.99	72.30	0.30	1.32	1.83	14.75	4.82	0.71	0.98	
Fresh vegetables	421	50.64	28.36	0.47	0.86	5.95	4.27	0.70	2.66	6.10	
Processed vegetables & fruits	2,003	54.99	13.85	1.04	6.72	16.83	0.36	1.33	2.22	2.65	
Vegetable & fruit juice	115	21.44	7.43	7.34	27.44	24.51	1.73	3.94	0.93	5.23	
Tree nuts	142	45.78	19.02	3.22	10.40	15.79	0.00	2.63	2.72	0.42	
Pulses	242	24.82	29.63	0.05	2.61	12.88	0.08	0.78	8.25	20.90	
Total vegetable and fruit exports	3,104	47.35	20.46	1.18	6.23	14.41	1.74	1.56	2.64	4.44	

Average change, 1998-2000.

Source: Global Agricultural Trade System, Foreign Agricultural Service, USDA.

Economic Research Service, USDA

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The upswing in fresh fruit imports was due in part to China's relaxation of trade barriers, particularly its stringent phytosanitary regulations, since the mid-1990s. For example, China's direct imports of U.S. citrus fruits (mainly oranges) surged in 2000 following the Agreement on U.S.-China Agricultural Cooperation which, effective in early 2000, lifted Chinese phytosanitary restrictions on importation of U.S. fresh citrus fruit and other commodities (meat, poultry products, and wheat).

China's imports of U.S. processed products also increased substantially, although to a lesser degree than fresh fruit. In particular, imports of processed potatoes (both frozen and other processed) and sweet corn (both frozen and canned) accelerated in the 1990s, reflecting rapid westernization in

the Chinese diet as incomes increased, mainly in coastal areas. These products accounted for nearly 75 percent of China's imports of U.S. processed products during 1998-2000, increasing from 25 percent during 1992-94.

The outlook for China's performance in the global market for vegetables and fruits will undoubtedly be shaped by broad-based agricultural and trade policies. But, it may also be affected by a recent development in its primary export market, Japan.

Japanese officials recently detected excessive pesticide residue in imported Chinese produce, and earlier this year began testing all vegetables imported from China for chemical residues. As a result, some

of Japan's food producers have reduced their use of selected Chinese-grown vegetables because of food safety concerns, while others intend to upgrade their product safety inspection processes to monitor the quality of Chinese-grown vegetables. Depending on how Chinese food and agricultural industries respond to these findings, China's status as the lead supplier of vegetables to Japan may be affected.

China's entry into the World Trade Organization in December 2001 will most likely lead to relaxation of trade barriers, which, combined with the effects of two decades of robust economic growth, may result in significant increases in imports.



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Further Reading

For more information, visit the ERS website:

Huang, Sophia Wu. "China Increases Exports of Fresh and Frozen Vegetables To Japan,"
www.ers.usda.gov/publications/vgs/aug02/vgs292-01/vgs29201.pdf

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special article in -
www.ers.usda.gov/publications/fts/mar02/fts297.pdf

Foreign Agriculture Service, USDA. GAIN Report # JA2034, Aug. 19, 2002.

Resources & Environment



Photo courtesy of Organic Valley Family™ of Farms

U.S. Organic Farming: A Decade of Expansion

American farmland under organic management has grown steadily over the last decade, with acreage for major crops (e.g., corn and soybeans) more than doubling between 1992 and 1997, and again between 1997 and 2001. Certified organic pasture (including ranchland) also doubled between 1997 and 2001, following USDA's lifting of restrictions on organic meat labeling in the late 1990s.

The rapid increase kept pace with consumer demand for organically produced food, which grew rapidly throughout the 1990s—20 percent or more annually. According to industry data, retail sales of organic products more than doubled between 1992 and 1996 to \$3.5 billion, mirroring the growth in acreage during this period. The growth in demand has continued. By 2001, U.S. organic sales exceeded \$9 billion, according to estimates from the International Trade Centre, and accounted for approximately 2 percent of total food sales. USDA's national organic standards and labeling rules, which went into effect in October, may potentially act as a marketing tool, generating further interest in organic products among farmers and consumers.

A decade in the making, USDA's new organic standards incorporate an ecological approach to farming that fosters cycling of resources and protection of biodiversity. Behind each organic label is a system of agricultural production and processing that meets a comprehensive system of national standards. The standards apply to the entire production system, not just individual practices such as use of specific inputs.

Measuring Adoption of Organic Farming

Acreage farmed with certified organic practices is based on data collected from all state and private certifiers active in the U.S. during 2000 and 2001. The procedures are similar to those used in previous benchmark reports on this sector for the 1992-94 period and for 1997. Data from state and private organic certifiers were collected and analyzed, uncertified production was excluded, and double-certified acreage was counted only once whenever possible. Fifty-three organic certification organizations—14 state and 39 private—conducted third-party certification of organic production in 2000 and 2001.

Producers who shift to organic farming systems from chemical-intensive systems must make changes across the broad spectrum of their production inputs and practices. An increasing number of farmers in the U.S. have taken on that challenge in recent years, meeting production and processing standards set by state and private organizations that have now been codified and expanded in the national standards.

Other Countries Ahead

U.S. farmers and ranchers have added a million acres of certified organic cropland and pasture since 1997 (certified by state or private organizations), bringing the total to 2.35 million acres in 48 states in 2001. According to USDA's Economic Research Service (ERS), farmers and ranchers certified about 1.3 million acres of cropland and 1 million acres of pasture and rangeland in 2001. Overall, certified organic cropland and pasture accounted for 0.3 percent of U.S. cropland and pasture in 2002, although for some crop sectors, particularly fruits and vegetables, the proportions were much higher. Examples include organic apples (3 percent of that crop's acreage), organic carrots (4 percent), and organic lettuce (5 percent).

Even so, the U.S. trails other countries in organic numbers. According to a worldwide survey in 2001 by a private research firm in Germany, the U.S. ranked fourth in land area managed under organic farming systems, behind Australia (with 19 million acres), Argentina (6.9 million acres), and Italy (2.6 million acres). Brazil, Germany, the United Kingdom (UK), Spain, France, and Canada also ranked among the top 10 countries in total organic area. In percentage of total farmland managed organically, the U.S. did not make the top 10. The leaders here were Switzerland (9 percent of total land area under organic management), Austria (8.6 percent), Italy (6.8 percent), Sweden (5.2 percent), the Czech Republic (3.9 percent), and the UK (3.3 percent).

While government intervention in the U.S. has focused primarily on market facilitation, at least two states—Iowa and Minnesota—have begun subsidizing conversion to organic farming systems as a way to capture the environmental benefits of these systems. Also, a number of uni-

Resources & Environment

National Standards Regulate Organic Production & Marketing

USDA's National Organic Program (NOP), authorized under the Organic Foods Production Act of 1990, facilitates domestic marketing of organically produced fresh and processed food, and assures consumers that such products meet consistent, uniform standards. USDA's Agricultural Marketing Service (AMS) published the final rule implementing the legislation in December 2000. The rule, which went into effect on October 21, 2002, requires that organic farmers and processors be certified by a state or private agency accredited under national standards. The program establishes:

- national production and handling standards for organically produced products, including a list of substances (inputs) that can and cannot be used,
- a national program for accrediting state and private organizations as certifying agents under the USDA national standards for organic certifiers,
- requirements for labeling products as organic or as containing organic ingredients,
- rules for importation of organic agricultural products, and
- civil penalties for violations of these regulations (e.g., falsely claiming a product is organic).

These regulations require that organic growers and handlers (including food processors) be certified if they wish to market a product as organic, unless they sell less than \$5,000 a year in organic agricultural products. Retail food establishments that sell organically produced agricultural products but do not process them are also exempt from certification.

versities have begun multidisciplinary organic research trials in recent years. One nonprofit group, the Organic Farming Research Foundation in Santa Cruz, California, started a grant program in 1990 for scientist-farmer teams to study organic production and marketing systems.

During the last several years, a number of USDA agencies have launched new programs and pilot projects to help organic producers address production and marketing problems and risks. And the Farm Security and Rural Investment Act of 2002 (Farm Act) includes several small but groundbreaking initiatives on research and technical assistance for organic farmers. For example, the Act authorizes \$5 million for a national cost-share assistance program to help organic farmers with small operations cover a substantial portion of the costs of certification. European countries with high levels of conversion to organic farming have been providing direct financial support for conversion since the late 1980s.

California Leads in Cropland, Colorado in Pasture

California, with mostly fruits and vegetables, and North Dakota, with wheat, soybeans, and other field crops, were the top two states in 2001 for certified organic cropland. Farmers in California had nearly 150,000 acres under certified organic management, and North Dakota producers followed closely with nearly 145,000 acres. Minnesota, Wisconsin, Iowa, and Montana were other leading states in terms of total certified organic cropland. Every state but Mississippi and Delaware had some certified cropland. Certified organic cropland increased significantly in most states in the U.S. between 1997 and 2001, more than doubling in 12 states. Pasture more than doubled in 24 states.

The organic farm sector differs substantially from the conventional farm sector in having a higher proportion of cropland devoted to vegetable production. While total vegetable acreage in the U.S. accounts for under 1 percent of total U.S. cropland, certified organic vegetable acreage accounts for nearly 5 percent of the total cropland under certified organic

management. Certified organic vegetables were grown in more states than any other organic crop.

The top three states for certified organic pasture in 2001 each had over 100,000 acres—Colorado (514,000 acres), Texas (221,000 acres), and Montana (137,000 acres). Forty other states also had certified pasture in 2001, most with less than 20,000 acres. Organic animal production systems were certified in 37 states in 2001, up from 23 states in 1997.

The number of certified organic beef cattle, milk cows, hogs, pigs, sheep, and lambs was about 72,000 in 2001, up nearly 4-fold since 1997. Dairy has been one of the fastest growing segments of the organic foods industry during this period, and milk cows accounted for over half of the certified animals. Poultry raised under certified organic management showed even higher levels of growth during this period. Certified organic layer hens, broilers and other poultry increased over 6-fold between 1997 and 2001. In 1999, USDA eased organic labeling restrictions for broilers. As a result, farmers rapidly expanded certified broiler production, increasing from 38,000 birds in 1997 to nearly 2 million birds in 2000, and over 3 million in 2001.

Organic expansion has not been uniform in the U.S. Between 1997 and 2001, nine states, over half in the South—Georgia, Louisiana, South Carolina, Tennessee and West Virginia—showed an overall decline in certified organic farmland. In general, the South has had less certified organic farmland than other regions, and small, local nonprofit enterprises have performed most of the certification in these states. A number of these certifying enterprises dropped their certification programs when national rules were implemented, likely causing some dislocation among certified growers in the region. However, several new certification programs have recently emerged in the South—including a state program in South Carolina and a local private program (Florida Certified Organic Growers and Consumers) that has expanded to other states—to fill in for services lost during the transition.

Organic farmland also receded in Florida and Idaho between 1997 and 2001

Resources & Environment

U.S. Organic Farming Continues to Expand

Item	1992	1993	1994	1995	1996	1997	2000	2001	Change		
									1992-1997	1997-2001	2000-2001
	<i>1,000 acres</i>								<i>Percent</i>		
Certified organic farmland											
Pasture/rangeland	532	491	435	279	--	496	810	1,040	7	109	28
Cropland	403	465	557	639	--	850	1,219	1,305	111	53	7
Total farmland	935	956	991	918	--	1,357	2,029	2,344	44	74	16
	<i>Number</i>										
Certified organic livestock											
Cattle	6,796	9,222	3,300	--	--	4,429	13,829	15,197	-35	243	10
Milk cows	2,265	2,846	6,100	--	--	12,897	38,196	48,677	469	277	27
Hogs & pigs	1,365	1,499	2,100	--	--	482	1,724	3,135	-65	550	82
Sheep and lambs	1,221	1,186	1,600	--	--	705	2,279	4,207	-42	497	85
Total livestock ¹	11,647	14,753	13,100	--	--	18,513	56,028	71,216	59	285	27
Certified organic poultry											
Layer hens	43,981	20,625	47,700	--	--	537,826	1,113,746	1,611,662	1123	200	45
Broilers	17,382	26,331	110,500	--	--	38,285	1,924,807	3,286,456	120	8484	71
Turkeys	--	--	--	--	--	750	9,138	98,653		13054	980
Total poultry ²	61,363	46,956	158,200	--	--	798,250	3,047,691	4,996,771	1201	2110	64
Certified organic operations³	3,587	3,536	4,060	4,856	--	5,021	6,592	6,949	40	38	5

-- Indicates data not available. Numbers may not add due to rounding.

1. Total livestock includes other and unclassified animals. 2. Total poultry includes other and unclassified animals. 3. Does not include subcontracted organic farm operations.

Sources: 1992-94, Agricultural Marketing Service, USDA; 1995 (including revisions of 1992-94 farmland), Agrisystems International; 1997, 2000, 2001, Economic Research Service, USDA
Economic Research Service, USDA

because large organic wild-crop operations for St. John's wort and saw palmetto berries (harvested from land not maintained under cultivation) discontinued their certification in those states. Idaho experienced severe drought conditions between 1997 and 2001, which lowered planted acreage in both conventional and organic farm sectors. Organic acreage also fell substantially in Alaska because the large ranches that had experimented with organic livestock production during the late 1990s decided to pursue other activities.

Small Farms Still Reign

Recent ERS research provides the first-ever estimates of the number of certified organic operations by state. California has the most, with slightly over 1,000 operations in 2001, up 12 percent from the previous year. Following California are Washington (548 operations), Wisconsin (469), Minnesota (421), Iowa (384), Pennsylvania (281), Ohio (265), New York (264), Vermont (251) and Maine (244). Only 3 of the top 10 states in number of certified operations—California, Minnesota, and Iowa—are also in the top 10 for certified cropland acreage.

Many of the top states in number of certified operations—particularly in the Northeast and Mid-Atlantic regions—are states with a high proportion of small farms that grow fruits and vegetables for direct marketing to consumers. Even in California, where the majority of very large organic fruit and vegetable operations are located, most of the organic farms are small.

Recent analysis of organic farm trends by

the University of California indicates that the state's organic farms remained small (under 5 acres on average) throughout the late 1990s. Average size of certified organic farms is up in California and the U.S. as a whole, as existing organic farmers expand and new large-scale operations become certified. Small-scale farms remain prevalent.

International Workshop on Organic Agriculture

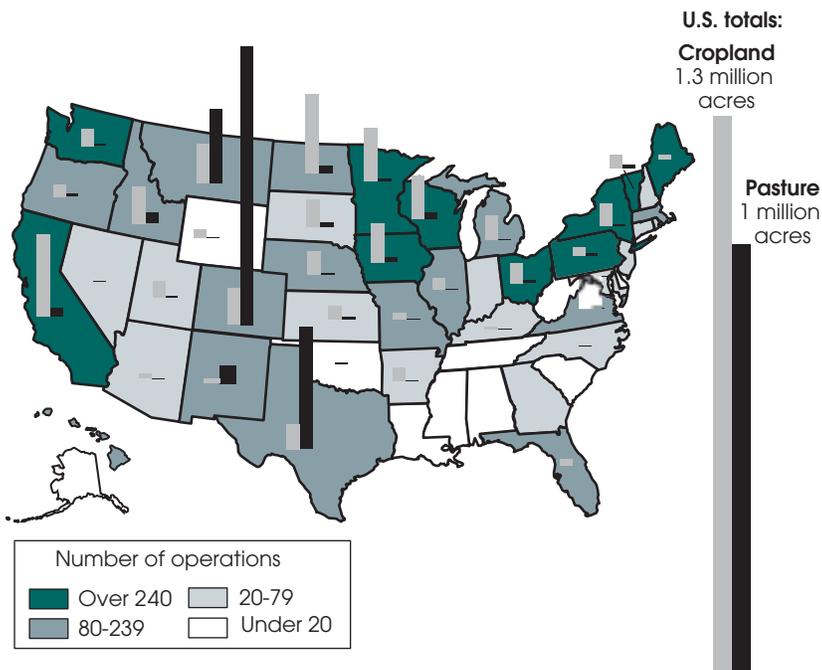
On September 23-26, 2002, the U.S. government hosted an Organization for Economic Cooperation and Development (OECD) Workshop on Organic Agriculture. Three USDA agencies—the Economic Research Service, the Agricultural Marketing Service, and the Agricultural Research Service—were major government sponsors. The U.S. location provided an opportunity for a broad spectrum of U.S.-based groups to participate.

The workshop:

- examined empirical evidence on the economic, environmental, and social impacts of organic agriculture in relation to “integrated” or “conventional” farming systems,
- identified the conditions under which organic agricultural systems are sustainable,
- reviewed market approaches and policies used to encourage, certify, and regulate organic agriculture,
- explored the trade effects of different policies on organic agriculture,
- contributed to OECD's work on agri-environmental issues, and
- generated practical policy advice.

Resources & Environment

U.S. Certified Organic Farmland and Operations, 2001



Economic Research Service, USDA

Producers capture a much higher share of the consumer food dollar when they market their produce directly to consumers, and USDA and other producer surveys indicate that organic farmers market directly much more frequently than do conventional farmers. States and municipalities, along with private conservation groups and others, have been fostering the development of local markets for the last decade, and the number of these outlets has jumped substantially. In the Northeast, mid-Atlantic and other regions, the majority of certified organic operations are small-scale farms that produce a variety of vegetable crops, fruits, herbs, and flowers for marketing directly to local consumers.

Small-scale organic farmers are also enhancing the viability of their operations by producing a large array of “value-added” products—foods processed on their farm or in farm-owned plants or farm-based cooperatives—to sell directly to the consumer in addition to fresh fruits and vegetables. According to the Organic Farming Research Foundation’s most recent organic producer survey, 31 percent of respondents produced value-added products in 1997. The products included

salsa, syrup, cider, pickles, preserves, dried and canned fruits and vegetables, butter, yogurt, cheese, milled flours, meat products, and wine.

Research Has Shown...

A limited, but growing number of studies in the U.S. have examined yields, input costs, profitability, managerial requirements, and other economic characteristics of organic farming. A 1990 review of the U.S. literature by researchers at Cornell University concluded that “variation within organic and conventional farming systems is likely as large as the differences between the two systems.” More recent U.S. studies at several universities and USDA Agricultural Experiment Stations have indicated that price premiums on organic products may provide organic farming systems comparable or higher whole-farm profits than conventional systems, particularly for crops like processed tomatoes and cotton.

Under certain circumstances, organic systems may be more profitable than conventional systems, even without price premiums. For example, university studies of Midwestern organic grain and soybean

production have found some organic systems to be more profitable than conventional systems due to higher yields in drier areas or periods, lower input costs, or higher revenue from the mix of crops used in the system. Recent studies by Washington State University and the University of California, comparing organic and conventional systems for apple production, have also shown higher returns under the organic systems.

Net returns to various organic production systems will vary with biophysical and economic factors—such as soil type, climate, proximity to markets, and other farm-specific factors—and a system that is optimal in one location may not be optimal in another. Also, factors not captured in standard profit calculations, such as convenience, longer term planning horizons, and environmental ethics can motivate adoption of a particular organic practice or farming system. Further research is needed to enhance understanding of the factors influencing returns to organic farming systems. **AO**

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USDA information on organic farming:

Agricultural Marketing Service/National Organic Program (NOP) web site at www.ams.usda.gov/nop/

ERS organic farming and marketing briefing room at www.ers.usda.gov/briefing/Organic/

“Organic Food Industry Taps Growing American Market,” *AO*, October 2002
www.ers.usda.gov/publications/AgOutlook/Oct2002/

Selected University websites:

University of California, Davis
<http://agronomy.ucdavis.edu/safs/>

University of West Virginia
www.caf.wvu.edu/plsc/organic

University of Minnesota
http://swroc.coafes.umn.edu/Ocp/main_page.html

Research & Technology



ARS/USDA photo: Scott Bauer

Precision Agriculture Adoption Continues to Grow

Rapid technological change has been a prominent feature of U.S. agriculture. Increased competitive pressures from international and domestic markets, yield potential, and environmental concerns motivate farmers to pursue and adopt innovations. A relatively new technology-based approach, precision agriculture (PA), appeared during the early 1990s.

Precision agriculture is generally described as the incorporation of modern information technologies into the management of agricultural inputs and production practices. The U.S. Congress defines it as “an integrated information and production-based farming system designed to increase long-term, site-specific, and whole farm production efficiencies, productivity, and profitability while minimizing unintended impacts on wildlife and the environment.”

Most definitions of PA stress the management of variability (e.g., in soil quality, nutrient levels, and pest infestation), which is common within most fields, in order to enhance economic benefits, and to reduce risks to the environment from agricultural production. Precision agriculture uses information technologies to match agricultural inputs (e.g., seeds, fer-

tilizer, pesticides, irrigation water) with crop needs or potential. Application of inputs is customized for different areas within the field, instead of treating a whole field as a single unit.

A site-specific approach allows producers to apply appropriate types and amounts of inputs, increase yields, reduce application costs, and maintain the quality of air, land, and water resources. PA technologies fall into two broad categories:

- **Spatial and/or temporal sensing technologies.** Yield monitors, yield maps, geo-referenced soil maps, and remotely sensed maps are used in detecting and recording variation in yields, soil attributes, or crop conditions within a farm field, including pest infestations and water or nutrient availability.

The survey data presented in this article are from USDA’s annual **Agricultural Resource Management Survey** (ARMS). This survey collects field-level production input and practice data and farm-level economic data. For further information: www.ers.usda.gov/briefing/ARMS/howarmsisconducted.htm

- **Application control technologies.** Also called variable-rate technologies (VRT), these use information from sensing technologies to spatially vary input application rates and timing for seed, fertilizer, and pesticides. Machine guidance technologies linked to the Global Positioning System (GPS) are also commercially available to enhance the efficiency of input applications and tillage operations.

[See Glossary, page 37](#)

Precision agriculture is a suite of technological tools that can be adopted individually or in combinations. Data on adoption of PA technologies tend to reflect this diversity.

Using the Technological Tools

Among producers of the four major field crops (corn, soybeans, wheat, and cotton), corn and soybean farmers have been the most rapid adopters of PA sensing technologies. In general, the share of corn and soybean planted acreage using yield monitors, or for which yield or geo-referenced soil maps were available, was more than twice that of wheat or cotton. USDA’s annual Agricultural Resource Management Survey found that while use of yield monitors in wheat production has grown steadily since 1996—from 6 percent of acreage to about 10 percent in 2000—use in corn and soybean acreage grew even faster, reaching nearly 30 percent for corn and over 25 percent for soybeans. Yield monitor use grew to over 33 percent of all planted corn acreage in 2001.

Cotton yield monitors have only recently become commercially available. Some of the recent growth in yield-monitored acreage has likely been facilitated by availability of combines with factory-installed yield monitors—an alternative to the retrofitted combines in use in the early 1990s.

Somewhat surprisingly, only about a third of corn and soybean acres reporting use of yield monitors also report producing a yield map—indicating that most yield monitor data is not geo-referenced and therefore not available for spatially vary-

Research & Technology

From Data to Decisions

Information stage	Information technology
Soil and plant data collection	Global Positioning System (GPS) <i>Sensing technologies:</i> Soil sampling, crop scouting, remote sensing, and yield monitoring
Data analysis	Decision support systems: Yield maps, Geographic Information Systems (GIS), crop growth models, and input amount, placement and timing recommendations
Input application	Global Positioning System (GPS) <i>Variable rate applicators for:</i> Fertilizers, manure, micronutrients, lime, herbicides, insecticides, seeds, and irrigation water

Use of Yield Monitors Is Associated with Farm Sales Class and with Level of Operator Education

Characteristic	Corn	Soybeans	All wheat	Cotton
<i>(Percent of planted acres in category)</i>				
Farm sales class				
< \$100,000	14	12	6.9	1
\$100-\$500,000	27	23.6	10.9	*
> \$500,000	46.8	43.6	15.8	1.9
Years of operator experience				
< 10	35	28.4	11.8	1.8
11-25	27.1	24.4	12.9	1.7
> 25	29.9	25.5	8.6	*
Education of operator				
< High school	12.9	14.8	2.6	*
High school	26.4	21.7	10.7	*
> High school	34.5	31.2	10.9	1.8

2001 data.
*Less than 1 percent.
Source: Agricultural Resource Management Survey, USDA
Economic Research Service, USDA

VRT Is Used More Widely for Applying Fertilizer Than for Seed or Pesticides

Year	For application of:			For application of:		
	Fertilizer	Seed	Pesticides	Fertilizer	Seed	Pesticides
<i>Percent of planted acres</i>						
	Corn			Soybeans		
1998	7.6	2	1.3	6.9	*	0.6
1999	10.5	2.8	1.2	7.1	1.5	1.5
2000	10.6	3.3	2.9	5.6	1.8	1.3
	All wheat			Cotton		
1998	1.8	1.1	1	2.6	1.4	1.6
1999	NA	NA	NA	1.9	2	2.5
2000	3	*	*	4.2	1.6	2.4

*Less than 1 percent. NA=Not available.
Source: Agricultural Resource Management Survey, USDA

ing input applications (at least not automatically).

Anecdotal information suggests that, even without geo-referencing, yield monitors can offer significant benefits. Besides

helping manage field variability, yield monitors may help the operator:

- guide field improvements, such as drainage and leveling;

- monitor moisture levels during harvest to help reduce drying costs;
- conduct in-field agronomic experiments (e.g., yield trials on crop varieties).

Adoption of VRT for input application tends to be much less prevalent among the major field crops than adoption of sensing technologies. Although the share of acreage using VRT has increased marginally across all inputs and crops over time, the most widespread use has been for fertilizer use on corn and soybeans. Many early uses for PA focused on nitrogen and phosphate application to corn and soybeans.

The relatively low VRT adoption rates for other crops and inputs likely reflect the small amount of acreage for which geo-referenced yield data are available as well as the scarcity of site-specific agronomic recommendations available to producers in many states (e.g., from an Extension service or from input or technology dealers). However, by 2000 over 10 percent of all cotton and wheat acreage, 17 percent of all soybean acreage, and over 20 percent of corn acreage were reported to have geo-referenced soil maps—indicating that many fields have some soil information available that would be useful for making spatially variable input decisions. The geo-referenced soil mapping data were generated largely through use of GPS technology in conjunction with soil testing for such attributes as residual nutrient levels and pH.

Other survey data indicate that, on about 5-10 percent of corn and soybean planted acreage, yield and/or soil attributes are being geo-referenced while variable-rate application of fertilizer, pesticides, and/or seeds is also being performed. This is the acreage on which PA technologies are being fully utilized to manage inputs.

Who Adopts Precision Agriculture?

Farm-level studies of the economic benefits and costs of complete PA systems, or individual components, are limited. However, the adoption rates for yield monitors are an indirect indication that producers are deriving economic benefits from this particular technology. One of the most comprehensive reviews of studies of PA

Research & Technology

**Selected Precision Agriculture Technologies:
Adoption Is Generally Increasing Over Time**

Technology/year	Corn	Soybeans	All wheat	Cotton
<i>Percent of planted acres</i>				
Yield monitor				
1996	15.6	12.6	6.1	NA
1997	17.3	12.2	7.3	NA
1998	18.5	18.6	7.9	*
1999	24.3	19.7	NA	2.2
2000	29.6	25.4	10.4	1.2
Yield map				
1996	NA	5.3	*	NA
1997	7.7	5.4	*	NA
1998	6.7	8.8	*	*
1999	11.6	8.5	NA	*
2000	10.7	8.2	1.7	*
Geo-referenced soil map¹				
1998	13.1	12.1	5.9	2.8
1999	16.7	14.7	NA	10
2000	21.9	17.1	11.1	13.1
Remotely sensed map				
1999	6.7	5.3	NA	NA
2000	5.2	4.2	3.1	NA

*Less than 1 percent. NA=Not available.

1. Share of acres geo-referenced is a cumulative rather than annual estimate. Respondents were asked whether their field had ever been geo-referenced, not whether the geo-referencing was done in a specific year.

Source: Agricultural Resource Management Survey, USDA.

Economic Research Service, USDA

profitability was conducted by Purdue University, which found that about 60 percent of the studies indicated positive returns for a given PA technology, about 10 percent indicated negative returns, and the remainder showed mixed results.

Farm size is perhaps the most striking attribute positively associated with PA adoption. Innovations with large fixed acquisition or information costs are typically less likely to be adopted by smaller farms since there are fewer acres over which to spread these costs. Estimates of capital costs for a complete yield monitoring information system for one combine (i.e., yield monitor, GPS receiver, memory card, computer, software, training, and installation) range from \$10,000 to \$15,000. Despite these costs, even among farms with less than \$100,000 in annual sales, yield monitors are being used on a substantial share of planted corn and soybean acreage.

There is also regional variability in the adoption of PA. Concentration of yield monitor use in the Heartland and Northern Crescent regions may be attributed to the fact that yield monitors were first introduced for corn and soybean harvesters. These regions are major corn and soybean producers, and a sizeable PA service sector has become established there.

What About the Future?

Several factors may be impeding more rapid PA adoption:

- incompatible components (for example, between different PA technology providers),
- lack of well-established, site-specific agronomic relationships (e.g., soil attributes and yield) which often vary annually, depending on weather conditions, and across the field;
- extensive producer training requirements for implementation;
- commodity-specific nature of many technologies; and
- capital requirements.

Precision Agriculture Glossary

Geo-referencing—the process of associating position information (location) with field data, such as yields, soil type, soil test results, and insect and weed infestation.

GPS (Global Positioning System)—a space-based navigation system. Positioning is achieved through the use of simultaneously received transmissions from four or more satellites above the horizon. A GPS receiver matches latitude, longitude, and altitude information with data obtained from a specific site on the field.

GIS (Geographic Information System)—the integration of hardware, software, data, organizations, and institutional relations to automate, manage, analyze, and display geo-referenced information.

Yield monitors—devices that estimate crop yield per area of a field by measuring the quantity of the crop and the area covered by the harvester.

Yield mapping—the process of collecting geo-referenced data on crop yield and crop characteristics, such as moisture content, while the crop is being harvested. A yield mapping system, typically using GIS, combines the output of a yield monitor with the position information provided by a GPS receiver.

Remote sensing—acquisition of information by a recording device not in physical contact with an object being studied. Devices such as cameras, radar, lasers, or radio receivers can collect information from remote locations such as airplanes or satellites.

Variable-rate technologies (VRT)—a system that varies the rate of agricultural inputs such as seed, fertilizer, and crop protection chemicals in response to varying conditions in specific areas of a field.

[Source: National Research Council]

Research & Technology

Uncertainties about the impact of adoption on yields and input use have also been cited as factors contributing to modest adoption rates for some PA technologies. Despite these constraints, analysis by USDA's Economic Research Service (ERS) suggests steady growth in the adoption of PA technology during the next few years.

The active network of public and private research and development organizations involved with PA will likely facilitate adoption by generating farm management decision systems that assist producers in extracting economic or environmental

benefits from their extensive geo-referenced soil, plant, and yield data bases. Development of PA technologies for specialty crop and livestock production is underway, as is commercialization of on-the-go or real-time sensing and input application instruments—allowing, for example, sensing and application to be accomplished in one trip over a field.

The predictable decline in information technology costs, development of more user-friendly technology, and growing computer capacity will all promote adoption. Government use of geographic information systems (GIS) for extension and

technical assistance will expose producers to geo-spatial technologies. In addition, technology is being developed for commodity trait monitoring (e.g., oil and protein content), identity preservation, and traceability that may allow producers to use PA to take advantage of premiums offered in specialty markets. **AO**

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Read more...

Cooperative State Research, Education, and Extension Service (CSREES), USDA
www.reeusda.gov/1700/programs/IFAFS/IFAFS.htm

“Precision Agriculture Technology Diffusion: Current Status and Future Prospects,” Proceedings of the 6th International Conference on Precision Agriculture, Minneapolis, MN. ASA/CSSA/SSSA, Madison, WI, July 14-17, 2002.

“Precision Agriculture in the 21st Century: Geospatial and Information Technologies in Crop Management.” National Research Council, National Academy Press, Wash., DC., 1997.

National Resources and Conservation Service (NRCS), USDA (2002)
www.ftw.nrcs.usda.gov/tech_tools.html.

Lambert, D. and Lowenberg-DeBoer, J. *Precision Agriculture Profitability Review*, mollisol.agry.purdue.edu/SSMC

The U.S. Congress defined precision agriculture in Public Law 105-185: Agricultural Research, Extension, and Education Reform Act of 1998 [Title IV--Section 403].

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Questions? Comments?

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***Agricultural Outlook* will continue publishing through December 2002**

AO tables will be published on the ERS website.

Competing in the 21ST Century

February 20-21, 2003 • Arlington, Virginia

Program Preview



THURSDAY, FEBRUARY 20, 2003

8:30 a.m.	Welcome					Plenary Sessions				
8:40 a.m.	2003 Market and Policy Prospects , <i>USDA Chief Economist Keith Collins and Under Secretary J.B. Penn</i>									
9:30 a.m.	Keynote Address , <i>Secretary of Agriculture Ann M. Veneman</i>									
10:00 a.m.	International Economic and Financial Developments , <i>Under Secretary of Treasury John Taylor, invited</i>									
10:30 a.m.	Refreshment Break									
11:00 a.m.	Distinguished Panel: Competing in the 21st Century									
12:30 p.m.	Networking Luncheon									
1:15 p.m.	Magazine Debut: USDA's Economic Research Service unveils a new publication									
1:45 p.m.	The Impact of EU Enlargement on the Export Competitiveness of Central and Eastern European Agriculture	Farm Organization Roundtable on Competing in the 21 st Century	Rural Economic Outlook and Implications for Farm Households	El Niño's Impact on Agriculture	Emerging Food Safety Issues in U.S. and Foreign Markets					
3:30 p.m.	Break									
3:45 p.m.	Brazil as a Competitor in Global Markets	Livestock Producer Initiatives To Compete in the 21 st Century	2002: Putting New Crop Insurance Programs to the Test	Controlling New Invasive and Exotic Pests and Diseases	The Effects of Transportation on the Competitiveness of U.S. Agriculture	Food Price Briefing				
5:30 p.m.	Cash Bar Reception									
6:30 p.m.	Forum Dinner: Distinguished Speaker to be announced									

A new ERS magazine will debut at 1:15 p.m. Thursday. Each issue will cover food, agriculture, rural America and the environment. Come to the unveiling for your copy.



FRIDAY, FEBRUARY 21, 2003

7:15 a.m.	Continental Breakfast									
8:15 a.m.	Outlook for Grains and Oilseeds	New Marketable Products from Animal Waste	International Trade Agreements and U.S. Sugar Policy	Building Trade Capacity in Developing and Transition Countries	Forces Shaping America's Eating Habits					
10:00 a.m.	Refreshment Break									
10:30 a.m.	World Trade Organization Negotiations: Modalities and Beyond	New Conservation Programs and Partnerships	Outlook for Cotton and Fibers	Outlook for Livestock and Poultry	Transitions in Markets for Agricultural Information					
12:15 p.m.	Break									
12:45 p.m.	Grains and Oilseeds Luncheon	Sugar and Sweeteners Luncheon	Cotton and Fibers Luncheon	Livestock and Poultry Luncheon	Horticulture Luncheon					
2:15 p.m.	Competition in the Asian Marketplace: Prospects and Restraints	Challenges of Complying with Air and Water Quality Regulations	Outlook for Tobacco	Outlook for Milk and Dairy Products	Outlook for the Floriculture, Greenhouse and Nursery Industries					
4:00 p.m.	Adjourn									

Forum program updates, confirmed speakers, and registration information at <http://www.usda.gov/oc>

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Speeches presented at the Forum will be posted at www.usda.gov/oc, starting in early March. To receive speech texts by e-mail, sign up now. Go to <http://usda.mannlib.cornell.edu>. Click on "reports by e-mail" and follow instructions to subscribe. Check the box marked "proceedings of the agricultural outlook forum" and submit.

Statistical Indicators

Summary Data

Table 1—Key Statistical Indicators of the Food & Fiber Sector

	Annual			2001				2002				2003	
	2001	2002	2003	IV	I	II	III	IV	I	II			
Prices received by farmers (1990-92=100)	102	99	--	94	100	97	--	--	--	--			
Livestock & products	106	91	--	100	96	90	--	--	--	--			
Crops	99	107	--	90	104	104	--	--	--	--			
Prices paid by farmers (1990-92=100)													
Production items	120	119	--	118	118	118	--	--	--	--			
Commodities and services, interest, taxes, and wage rates (PPITW)	124	123	--	123	123	123	--	--	--	--			
Cash receipts (\$ bil.)	203	196	--	61	46	42	48	60	--	--			
Livestock	106	97	--	28	25	23	23	27	--	--			
Crops	96	99	--	33	21	19	26	33	--	--			
Market basket (1982-84=100)													
Retail cost	177	--	--	179	181	--	--	--	--	--			
Farm value	106	--	--	108	107	--	--	--	--	--			
Spread	215	--	--	217	220	--	--	--	--	--			
Farm value/retail cost (%)	21	--	--	21	21	--	--	--	--	--			
Retail prices (1982-84=100)													
All food	173	177	180	175	176	176	176	177	178	179			
At home	173	176	179	175	176	176	175	176	177	179			
Away from home	174	179	182	176	177	178	179	180	181	182			
Agricultural exports (\$ bil.) ¹	52.8	54.5	--	15.2	13.8	12.2	12.4	--	--	--			
Agricultural imports (\$ bil.) ¹	39.0	40.0	--	10.0	10.1	10.9	9.5	--	--	--			
Commercial production													
Red meat (mil. lb.)	45,663	47,252	45,465	12,048	11,259	11,733	12,040	12,220	11,154	11,432			
Poultry (mil. lb.)	37,343	38,552	39,195	9,444	9,372	9,835	9,765	9,580	9,505	10,010			
Eggs (mil. doz.)	7,152	7,216	7,230	1,829	1,767	1,789	1,820	1,840	1,770	1,790			
Milk (bil. lb.)	165.3	169.8	171.4	40.8	42.3	44.0	41.8	41.8	43.0	44.3			
Consumption, per capita													
Red meat and poultry (lb.)	213.3	220.3	215.2	54.9	52.2	55.5	56.5	56.2	52.3	54.8			
Corn beginning stocks (mil. bu.) ²	1,899.1	--	--	1,899.1	1,899.1	8,264.7	--	--	--	--			
Corn use (mil. bu.) ²	9,780.0	--	--	3,143.7	3,143.7	2,471.1	--	--	--	--			
Prices ³													
Choice steers--Neb. Direct (\$/cwt)	72.71	67.02	71-77	65.13	70.19	65.58	63.29	68-70	68-72	71-77			
Barrows and gilts--IA, So. MN (\$/cwt)	45.81	34.08	35-38	37.30	39.43	35.03	33.86	27-29	34-36	36-40			
Broilers--12-city (cents/lb.)	59.10	55.90	57-61	58.50	56.00	56.10	56.40	54-56	55-59	56-60			
Eggs--NY gr. A large (cents/doz.)	67.20	66.50	64-69	68.20	69.10	58.40	65.30	72-74	68-72	58-62			
Milk--all at plant (\$/cwt)	14.97	12.10-12.20	12.00-12.90	14.50	13.07	12.10	11.33	11.90-12.30	11.70-12.40	11.30-12.30			
Wheat--KC HRW ordinary (\$/bu.)	3.33	--	--	3.30	3.26	3.33	--	--	--	--			
Corn--Chicago (\$/bu.)	2.03	--	--	2.01	2.06	2.09	--	--	--	--			
Soybeans--Chicago (\$/bu.)	4.58	--	--	4.45	4.42	4.86	5.67	--	--	--			
Cotton--avg. spot 41-34 (cents/lb)	39.68	--	--	30.62	32.32	33.12	38.96	--	--	--			
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002			
Farm real estate values ⁴													
Nominal (\$ per acre)	740	798	844	887	926	974	1,020	1,080	1,150	1,210			
Real (1996 \$)	806	848	879	904	926	955	988	1,032	1,074	1,106			
U.S. civilian employment (mil.) ⁵	129.2	131.1	132.3	133.9	136.3	137.7	139.4	140.9	141.8	--			
Food and fiber (mil.)	23.6	24.3	24.5	24.4	24.2	24.4	24.6	24.6	23.7	--			
Farm sector (mil.)	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	1.9	--			
U.S. gross domestic product (\$ bil.)	6,642.3	7,054.3	7,400.5	7,813.2	8,318.4	8,781.5	9,274.3	9,824.6	10,082.2	--			
Food and fiber--net value added (\$ bil.)	957.6	1,026.9	1,048.3	1,078.7	1,102.0	1,131.6	1,180.9	1,241.2	1,244.6	--			
Farm sector--net value added (\$ bil.) ⁶	70.2	77.8	73.5	85.7	82.6	73.8	71.2	75.7	73.8	--			

-- = Not available. Annual and quarterly data for the most recent year contain forecasts. 1. Annual data based on Oct.-Sep. fiscal years ending with year indicated. 2. Sep.-Nov. first quarter; Dec.-Feb. second quarter; Mar.-May third quarter; Jun.-Aug. fourth quarter; Sep.-Aug. annual. Use includes exports and domestic disappearance. 3. Simple averages, Jan.-Dec. 4. As of January 1. 5. Civilian labor force taken from "Monthly Labor Review," Table 18--Annual Data: Employment Status of the Population, Bureau of Labor Statistics, U.S. Department of Labor. 6. The value-added data presented here are consistent with accounting conventions of the National Income and Product Accounts, U.S. Department of Commerce.

U.S. & Foreign Economic Data

Table 2—U.S. Gross Domestic Product & Related Data

	Annual		2000		2001				2002	
	1999	2000	2001	IV	I	II	III	IV	I	II
Billions of current dollars (quarterly data seasonally adjusted at annual rates)										
Gross Domestic Product	9,274.3	9,824.6	10,082.2	9,953.6	10,028.1	10,049.9	10,097.7	10,152.9	10,313.1	10,376.9
Gross National Product	9,297.1	9,848.0	10,104.1	9,982.8	10,038.0	10,081.0	10,109.3	10,188.1	10,314.9	10,356.8
Personal consumption expenditures	6,246.5	6,683.7	6,987.0	6,808.0	6,904.7	6,959.8	6,983.7	7,099.9	7,174.2	7,254.7
Durable goods	755.9	803.9	835.9	797.2	816.8	820.3	824.0	882.6	859.0	856.9
Nondurable goods	1,830.1	1,972.9	2,041.3	2,011.1	2,031.5	2,044.8	2,044.3	2,044.4	2,085.1	2,108.2
Food	898.9	955.0	992.4	968.8	984.2	988.7	993.8	1,002.8	1,025.0	1,023.9
Clothing and shoes	301.0	313.7	315.3	318.7	317.9	313.6	312.1	317.4	325.8	323.9
Services	3,660.5	3,906.9	4,109.9	3,999.7	4,056.4	4,094.7	4,115.4	4,172.9	4,230.1	4,289.5
Gross private domestic investment	1,636.7	1,755.4	1,586.0	1,757.4	1,671.1	1,597.2	1,574.9	1,500.7	1,559.4	1,588.0
Fixed investment	1,577.2	1,691.8	1,646.3	1,700.4	1,698.3	1,654.3	1,635.5	1,597.2	1,589.4	1,584.6
Change in private inventories	59.5	63.6	-60.3	57.1	-27.2	-57.1	-60.6	-96.5	-29.9	3.4
Net exports of goods and services	-249.9	-365.5	-348.9	-393.2	-372.7	-365.7	-312.6	-344.5	-360.1	-425.6
Government consumption expenditures and gross investment	1,641.0	1,751.0	1,858.0	1,781.4	1,825.0	1,858.5	1,851.7	1,896.8	1,939.5	1,959.8
Billions of 1996 dollars (quarterly data seasonally adjusted at annual rates) ¹										
Gross Domestic Product	8,859.0	9,191.4	9,214.5	9,243.8	9,229.9	9,193.1	9,186.4	9,248.8	9,363.2	9,392.4
Gross National Product	8,883.7	9,216.2	9,237.3	9,274.0	9,241.7	9,224.3	9,199.8	9,283.5	9,367.5	9,376.7
Personal consumption expenditures	5,964.5	6,223.9	6,377.2	6,288.8	6,326.0	6,348.0	6,370.9	6,464.0	6,513.8	6,542.4
Durable goods	812.5	878.9	931.9	876.5	900.6	912.4	922.6	992.0	975.9	980.7
Nondurable goods	1,765.1	1,833.8	1,869.8	1,853.1	1,863.7	1,862.3	1,868.3	1,885.0	1,921.4	1,920.9
Food	846.8	879.0	887.0	883.9	889.1	887.4	884.3	887.1	901.4	899.2
Clothing and shoes	312.1	329.4	337.7	335.1	334.3	334.7	337.1	344.8	355.8	355.1
Services	3,395.4	3,524.5	3,594.9	3,570.6	3,576.3	3,589.3	3,597.5	3,616.6	3,642.2	3,666.2
Gross private domestic investment	1,660.5	1,762.9	1,574.6	1,755.2	1,661.8	1,583.5	1,562.7	1,490.3	1,554.0	1,583.9
Fixed investment	1,595.2	1,691.9	1,627.4	1,691.3	1,682.1	1,633.5	1,615.7	1,578.4	1,576.4	1,572.6
Change in private inventories	62.8	65.0	-61.4	59.9	-26.9	-58.3	-61.8	-98.4	-28.9	4.9
Net exports of goods and services	-320.5	-398.8	-415.9	-418.5	-404.5	-414.8	-419.0	-425.3	-446.6	-487.4
Government consumption expenditures and gross investment	1,540.6	1,582.5	1,640.4	1,593.4	1,615.7	1,638.0	1,633.3	1,674.5	1,697.3	1,703.3
GDP implicit price deflator (% change)	1.4	2.1	2.4	2.1	3.7	2.5	2.2	-0.5	1.3	1.2
Disposable personal income (\$bil.)	6,627.4	7,120.2	7,393.2	7,259.8	7,317.5	7,340.0	7,524.2	7,391.2	7,666.7	7,786.6
Disposable pers. income (1996 \$bil.)	6,328.4	6,630.3	6,748.0	6,706.2	6,704.3	6,694.8	6,864.0	6,729.1	6,961.0	7,022.1
Per capita disposable pers. income(\$)	23,742	25,205	25,859	25,577	25,713	25,717	26,275	25,729	26,616	26,953
Per capita disp. pers. income (1996\$)	22,671	23,471	23,602	23,627	23,558	23,456	23,970	23,424	24,166	24,307
U.S. resident population plus Armed Forces overseas (mil.) ²	272.9	275.4	--	276.3	--	--	--	--	--	--
Civilian population (mil.) ²	271.5	273.9	--	274.9	--	--	--	--	--	--
Monthly data seasonally adjusted										
	1999	2000	2001	Aug	Mar	Apr	May	Jun	Jul	Aug
Total industrial production (1992=100)	144.7	151.6	144.8	144.5	143.4	143.4	144.2	145.0	145.5	145.3
Leading economic indicators (1996=100)	108.8	109.9	109.5	109.8	111.9	111.6	112.3	112.1	111.9	111.8
Civilian employment (mil. persons)	133.5	135.2	135.1	134.4	133.9	134.0	134.4	134.1	134.0	134.5
Civilian unemployment rate (%)	4.2	4.0	4.8	4.9	5.7	6.0	5.8	5.9	5.9	5.7
Personal income (\$bil. annual rate)	7,786.5	8,406.6	8,685.3	8,707.0	8,836.3	8,869.2	8,906.0	8,966.0	8,968.6	9,001.6
Money stock-M2 (daily avg.)(\$bil.) ³	4,654.2	4,938.5	5,457.9	5,263.7	5,499.6	5,483.0	5,547.4	5,581.5	5,641.1	5,685.5
Three-month Treasury bill rate(%)	4.66	5.85	3.45	3.39	1.81	1.72	1.74	1.71	1.68	1.63
AAA corporate bond yield (Moody's) (%)	7.04	7.62	7.08	7.02	6.81	6.76	6.75	6.63	6.53	6.37
Total housing starts (1,000) ⁴	1,640.9	1,568.7	1,602.7	1,562	1,675	1,566	1,742	1,692	1,645	1,609
Business inventory/sales ratio ⁵⁶	1.41	1.42	1.43	1.42	1.38	1.35	1.36	1.36	1.35	--
Retail & food services sales (\$ bil.) ⁶⁷	3,149.2	3,388.8	3,504.2	290.8	296.2	299.6	296.6	300.6	304.2	306.0
Food and beverage stores (\$ bil.)	441.4	465.3	481.1	39.5	40.1	39.9	40.0	40.0	40.1	40.1
Clothing & accessory stores (\$ bil.)	159.7	168.5	169.7	14.2	14.7	14.6	14.3	14.6	14.4	14.5
Food services & drinking places (\$ bil.)	286.3	306.1	321.0	27.0	28.0	28.1	28.1	28.3	28.1	28.2

-- = Not available. 1. In October 1999, 1996 dollars replaced 1992 dollars. 2. Population estimates based on 1990 census. 3. Annual data as of December of year listed. 4. Private, including farm. 5. Manufacturing and trade. 6. In July 2001, all numbers were revised due to a changeover from the Standard Industrial Classification System to the North American Industry Classification System. 7. Annual total.

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Table 3—World Economic Growth

	Calendar year									
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
	<i>Real GDP, annual percent change</i>									
World	3.1	2.8	3.5	3.4	1.9	2.9	3.9	1.1	1.7	2.6
less U.S.	2.7	2.8	3.4	3.0	1.0	2.4	3.9	1.4	1.3	2.6
Developed economies	2.8	2.3	3.1	3.0	2.1	2.7	3.4	0.7	1.2	2.1
less U.S.	2.1	2.2	2.8	2.3	1.0	2.0	3.1	1.0	0.6	1.8
United States	4.0	2.7	3.6	4.4	4.3	4.1	3.8	0.3	2.5	2.7
Canada	4.7	2.7	1.5	4.4	3.3	4.6	4.6	1.5	3.4	3.0
Japan	0.6	1.5	5.1	1.6	-2.5	0.2	2.4	-0.3	-0.9	1.0
Australia	4.5	4.5	3.8	4.7	4.5	4.4	1.8	2.7	3.9	3.5
European Union	2.8	2.4	1.6	2.5	2.8	2.7	3.6	1.5	1.0	2.1
Transition economies	-8.1	-1.3	-0.8	1.4	-1.4	3.5	6.7	4.5	3.5	4.0
Eastern Europe	3.9	5.6	4.0	2.7	2.7	2.5	3.9	2.6	2.3	3.6
Poland	5.2	7.0	6.0	6.8	4.8	4.1	4.2	1.1	1.1	3.0
Former Soviet Union	-14.1	-5.4	-4.0	0.5	-4.4	4.2	8.8	5.9	4.3	4.3
Russia	-12.6	-4.1	-3.4	0.9	-4.9	5.0	9.1	5.1	4.0	4.2
Developing economies	6.3	5.3	5.8	5.3	1.2	3.4	5.8	2.2	3.2	4.5
Asia	8.8	8.3	7.4	5.8	0.4	6.4	7.2	3.7	5.6	5.8
East Asia	9.7	8.7	7.7	7.0	1.9	7.4	8.2	4.1	6.2	6.1
China	12.8	10.5	9.6	8.8	7.8	7.1	8.0	7.4	7.8	7.2
Taiwan	7.1	6.4	6.1	6.7	4.6	5.4	5.9	-2.2	3.3	4.0
Korea	8.2	8.9	6.8	5.0	-6.7	10.7	9.5	3.0	6.1	5.5
Southeast Asia	8.3	8.3	7.3	4.0	-7.5	3.6	6.1	1.8	4.2	5.4
Indonesia	7.5	8.2	7.8	4.7	-13.2	0.7	4.8	3.4	3.8	5.1
Malaysia	9.2	9.8	10.0	7.3	-7.4	5.8	8.4	0.5	4.3	5.9
Philippines	4.4	4.7	5.8	5.2	-0.8	3.2	4.4	3.2	4.2	4.4
Thailand	9.0	8.9	5.9	-1.7	-10.2	4.2	4.7	1.8	4.7	5.4
South Asia	6.6	7.1	6.3	4.2	6.1	6.1	4.9	4.4	4.9	5.4
India	7.3	7.7	7.0	4.6	6.8	6.5	4.9	4.5	5.0	5.6
Pakistan	3.9	5.1	3.9	1.0	2.5	4.0	3.9	3.6	4.4	5.0
Latin America	5.3	1.4	3.7	5.2	1.8	0.0	3.7	0.3	-1.1	2.0
Mexico	4.4	-6.2	5.2	6.8	4.9	3.5	6.7	-0.3	1.5	3.8
Caribbean/Central	4.1	3.8	3.6	6.4	6.8	6.9	4.9	1.5	2.4	5.2
South America	5.6	3.1	3.3	4.8	1.0	-1.1	2.9	0.4	-1.9	1.4
Argentina	5.8	-2.8	5.5	8.1	3.9	-3.2	-0.8	-4.4	-12.0	1.5
Brazil	5.9	4.2	2.8	3.2	-0.1	0.8	4.4	1.6	0.7	1.3
Colombia	5.8	5.2	2.1	3.4	0.5	-4.3	2.2	1.6	0.5	1.8
Venezuela	-2.3	3.7	-0.5	6.5	-0.7	-6.1	3.2	3.2	-4.1	-1.5
Middle East	-0.3	4.4	4.7	4.4	2.7	-0.8	5.6	-0.9	2.5	4.0
Israel	6.9	7.0	5.1	3.2	2.6	2.2	5.9	-0.6	-1.7	0.8
Saudi Arabia	0.5	0.5	1.4	1.9	2.3	-0.8	4.5	2.2	-0.5	3.2
Turkey	-5.5	7.2	7.0	7.5	3.1	-4.7	7.2	-7.1	5.3	5.6
Africa	3.2	2.9	5.2	2.8	3.1	2.6	3.5	3.4	2.4	3.8
North Africa	3.9	1.5	6.5	2.6	5.6	3.8	3.5	4.2	2.6	3.9
Egypt	3.9	4.7	5.0	5.5	5.6	6.0	5.2	3.3	1.7	3.5
Sub-Saharan	2.6	3.9	4.3	3.0	1.3	1.7	3.6	2.8	2.2	3.7
South Africa	3.2	3.1	4.2	2.5	0.6	1.2	3.4	2.2	2.4	3.4
	<i>Consumer prices, annual percent change</i>									
Developed economies	3.1	2.6	2.6	2.4	2.1	1.5	1.4	2.3	2.4	1.7
Transition economies	635.8	274.2	133.8	42.5	27.3	21.8	43.9	20.0	16.4	10.7
Developing economies	49.2	55.3	23.2	15.4	9.9	10.5	6.8	6.0	5.9	5.1
Asia	10.8	16.0	13.2	8.3	4.8	7.7	2.5	1.9	2.8	3.3
Latin America	194.6	200.3	36.0	21.2	12.9	9.9	8.8	8.1	6.2	4.9
Middle East	29.4	37.3	39.1	29.6	27.7	27.6	23.2	19.2	18.9	14.5
Africa	39.0	54.7	35.3	30.2	14.2	10.8	11.5	13.6	12.6	8.0

The last 3 years are either estimates or forecasts. Sources: Oxford Economic Forecasting; International Financial Statistics, IMF.

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Farm Prices

Table 4—Indexes of Prices Received & Paid by Farmers, U.S. Average

	Annual			2001			2002			
	2000	2001	2002	Sep	Apr	May	Jun	Jul	Aug	Sep
	1990-92=100									
Prices received										
All farm products	96	102	99	106	95	97	98	100	100	99
All crops	96	99	105	103	100	106	106	111	114	111
Food grains	85	91	90	92	84	86	95	105	114	124
Feed grains and hay	86	91	94	92	92	94	97	102	110	115
Cotton	82	65	50	64	48	47	58	62	54	54
Tobacco	107	107	109	108	--	--	--	107	104	104
Oil-bearing crops	85	80	83	81	80	83	88	96	99	90
Fruit and nuts, all	101	108	101	129	85	106	119	129	135	132
Commercial vegetables	121	126	158	135	125	124	115	117	120	120
Potatoes and dry beans	93	98	152	103	147	173	166	175	130	108
Livestock and products	97	106	93	111	90	90	91	89	87	86
Meat animals	94	97	88	96	87	85	85	87	84	81
Dairy products	94	115	95	131	96	93	89	86	87	88
Poultry and eggs	106	116	99	121	91	96	102	97	94	94
Prices paid										
Commodities and services, interest, taxes, and wage rates (PPITW)	120	124	123	124	123	123	123	124	124	125
Production items	116	120	118	120	119	118	118	119	120	121
Feed	102	109	109	110	110	109	110	115	117	120
Livestock and poultry	110	111	102	112	102	98	95	96	97	98
Seeds	124	132	140	134	144	144	144	144	144	144
Fertilizer	110	123	107	112	107	108	109	109	109	110
Agricultural chemicals	120	120	119	120	119	118	118	118	118	118
Fuels	134	121	105	134	114	110	107	111	114	119
Supplies and repairs	124	128	129	128	129	130	130	131	131	131
Autos and trucks	119	118	116	116	116	116	115	115	114	114
Farm machinery	139	144	147	146	147	147	147	147	147	148
Building material	121	121	121	121	122	122	122	122	123	124
Farm services	119	121	120	122	119	120	121	121	121	121
Rent	110	117	120	117	120	120	120	120	120	120
Interest payable per acre on farm real estate debt	113	114	109	114	109	109	109	109	109	109
Taxes payable per acre on farm real estate	123	124	126	124	126	126	126	126	126	126
Wage rates (seasonally adjusted)	140	146	153	143	153	153	153	149	149	149
Prod. items, interest, taxes & wage rates (PITW)	118	122	121	122	121	121	121	121	122	123
Ratio, prices received to prices paid (%)*	81	82	80	85	77	79	80	81	81	79
Prices received (1910-14=100)	612	649	626	675	601	619	622	634	638	630
Prices paid, etc. (1910-14=100)	1,594	1,646	1,638	1,649	1,643	1,638	1,639	1,645	1,654	1,661
Parity ratio (1910-14=100) (%)*	39	39	38	41	37	38	38	39	39	38

Values for the two most recent months are revised or preliminary. *Ratio of index of prices received for all farm products to index of prices paid for commodities and services, interest, taxes, and wage rates. Ratio uses the most recent prices paid index.

Data for this table are taken from the publication *Agricultural Prices*, which is produced monthly by USDA's National Agricultural Statistics Service (NASS) and is available at <http://usda.mannlib.cornell.edu/reports/nassr/price/pap-bb/>. For historical data or for categories not listed here, call the NASS Information Hotline at 1-800-727-9540, or access the NASS Home Page at <http://www.usda.gov/nass>.

Table 5—Prices Received by Farmers, U.S. Average

	Annual ¹			2001		2002				
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
Crops										
All wheat (\$/bu.)	2.48	2.62	2.80	2.85	2.84	2.81	2.93	3.21	3.63	4.07
Rice, rough (\$/cwt)	5.93	5.61	4.25	4.78	3.88	3.96	3.86	3.77	3.72	3.79
Corn (\$/bu)	1.82	1.85	2.00	1.91	1.91	1.93	1.97	2.13	2.38	2.56
Sorghum (\$/cwt)	2.80	3.37	3.50	3.46	3.14	3.17	3.83	4.06	4.21	4.50
All hay, baled (\$/ton)	76.90	85.00	97.30	99.00	99.90	102.00	95.80	93.60	93.70	95.50
Soybeans (\$/bu.)	4.63	4.54	4.30	4.53	4.47	4.64	4.88	5.35	5.53	5.54
Cotton, upland (¢/lb.)	45.00	49.80	32.40	38.50	29.30	28.60	34.90	37.60	33.00	32.50
Potatoes (\$/cwt)	5.77	5.08	6.60	6.04	8.63	10.40	9.95	10.80	7.65	6.53
Lettuce (\$/cwt) ²	13.30	17.40	17.60	26.20	13.70	9.97	10.50	11.30	14.60	13.00
Tomatoes, fresh (\$/cwt) ²	25.90	30.80	30.20	23.50	32.30	30.00	28.40	26.70	23.70	21.30
Onions (\$/cwt)	9.78	11.30	11.40	10.70	19.00	21.80	20.70	17.60	13.70	11.70
Beans, dry edible (\$/cwt)	16.40	15.50	19.40	18.10	27.20	27.50	26.70	24.50	23.40	17.80
Apples for fresh use (¢/lb.)	21.30	17.80	22.90	21.20	21.50	21.80	22.00	20.60	24.50	30.00
Pears for fresh use (\$/ton)	294.00	264.00	282.00	415.00	267.00	267.00	337.00	312.00	460.00	474.00
Oranges, all uses (\$/box) ³	5.47	3.58	3.56	6.20	4.30	4.82	4.13	3.90	6.61	6.31
Grapefruit, all uses (\$/box) ³	3.17	3.89	2.24	6.88	1.02	1.05	4.16	6.36	5.60	5.81
Livestock										
Cattle, all beef (\$/cwt)	63.40	68.60	71.30	69.00	67.20	65.20	64.10	63.80	64.30	64.60
Calves (\$/cwt)	87.70	104.00	106.00	107.00	100.00	98.50	94.80	94.90	94.40	93.00
Hogs, all (\$/cwt)	30.30	42.30	44.30	45.20	31.80	33.10	35.80	39.20	31.90	26.50
Lambs (\$/cwt)	74.50	79.80	66.90	52.50	64.30	64.30	72.80	75.70	75.00	--
All milk, sold to plants (\$/cwt)	14.38	12.40	15.05	17.10	12.50	12.20	11.60	11.20	11.30	11.50
Milk, manuf. grade (\$/cwt)	12.84	10.52	13.44	16.00	11.30	11.10	10.30	9.50	9.80	10.00
Broilers, live (¢/lb.)	37.10	33.60	39.30	43.00	30.00	32.00	33.00	31.00	29.00	30.00
Eggs, all (¢/doz.) ⁴	62.20	61.80	62.20	55.50	51.90	50.50	63.20	57.60	62.20	57.90
Turkeys (¢/lb.)	40.80	40.70	39.00	40.50	32.60	35.50	36.90	38.30	37.90	36.90

-- = Not available.

Values for the two most recent months are revised or preliminary. 1. Season-average price by crop year for crops. Calendar year average of monthly prices for livestock. 2. Excludes Hawaii. 3. Equivalent on-tree returns. 4. Average of all eggs sold by producers including hatching eggs and eggs sold at retail.

Data for this table are taken from the publication *Agricultural Prices*, which is produced monthly by USDA's National Agricultural Statistics Service (NASS) and is available at <http://usda.mannlib.cornell.edu/reports/nassr/price/pap-bb/>. For historical data or for categories not listed here, call the NASS Information Hotline at 1-800-727-9540, or access the NASS Home Page at <http://www.usda.gov/nass>.

Producer & Consumer Prices

Table 6—Consumer Price Indexes for All Urban Consumers, U.S. Average (not seasonally adjusted)

	Annual		2001			2002				
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
	<i>1982-84=100</i>									
Consumer Price Index, all items	166.6	172.1	177.1	178.3	179.8	179.8	179.9	180.1	180.7	181.0
CPI, all items less food	167.0	172.9	177.8	179.0	180.4	180.4	180.6	180.8	181.5	181.8
All food	164.1	167.8	173.1	174.1	176.2	175.8	175.8	176.0	176.0	176.4
Food away from home	165.1	169.0	173.9	175.1	177.2	177.6	178.2	178.5	178.8	179.2
Food at home	164.2	167.9	173.4	174.3	176.4	175.5	175.0	175.2	174.9	175.2
Meats ¹	142.3	150.7	159.3	161.5	160.6	160.6	160.5	160.2	160.7	159.9
Beef and veal	139.2	148.1	160.5	161.1	162.3	162.1	160.2	159.7	160.0	159.6
Pork	145.9	156.5	162.4	167.8	161.3	161.7	162.7	162.5	163.8	161.0
Poultry	157.9	159.8	164.9	165.4	166.9	167.0	165.6	167.2	166.1	167.8
Fish and seafood	185.3	190.4	191.1	189.1	189.2	191.0	188.1	191.2	187.2	186.9
Eggs	128.1	131.9	136.4	131.4	138.4	131.8	136.0	134.8	138.5	136.1
Dairy and related products ²	159.6	160.7	167.1	169.4	168.7	169.0	168.0	167.6	167.2	166.3
Fats and oils ³	148.3	147.4	155.7	158.5	156.5	155.9	154.6	154.9	154.1	155.3
Fresh fruits	266.3	258.3	265.1	266.0	266.9	278.1	266.7	261.6	263.3	271.5
Fresh vegetables	209.3	219.4	230.6	228.2	255.9	238.6	239.3	241.8	238.9	236.1
Potatoes	193.1	196.3	202.3	218.3	244.1	248.0	253.4	260.7	263.8	246.4
Cereals and bakery products	185.0	188.3	193.8	195.1	198.1	198.2	198.7	198.7	198.6	198.4
Sugar and sweets	152.3	154.0	155.7	156.6	159.6	157.9	158.7	160.2	159.9	159.6
Nonalcoholic beverages ⁴	134.3	137.8	139.2	139.2	140.0	138.0	137.5	138.3	137.6	140.2
Apparel										
Footwear	125.7	123.8	123.0	122.9	124.6	124.5	121.2	118.5	119.7	121.6
Tobacco and smoking products	355.8	394.9	425.2	444.0	461.4	449.0	467.4	467.2	478.2	485.8
Alcoholic beverages	169.7	174.7	179.3	180.4	182.9	183.3	183.5	183.8	184.2	183.9

1. Beef, veal, lamb, pork, and processed meat. 2. Included butter through December 1997. 3. Includes butter as of January 1998.

4. Includes fruit juices as of January 1998.

This table is compiled with data provided by the Bureau of Labor Statistics (BLS). BLS operates a website at <http://www.bls.gov> and a Consumer Prices Information Hotline at (202) 691-7000.

Table 7—Producer Price Indexes, U.S. Average (not seasonally adjusted)

	Annual			2001			2002			
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
	<i>1982=100</i>									
All commodities	125.5	132.7	134.2	133.3	130.8	130.8	131.1	131.2	131.5	132.0
Finished goods ¹	133.0	138.0	140.7	141.6	138.8	138.6	139.2	138.9	138.7	138.9
All foods ²	132.2	133.0	137.3	139.2	134.2	134.5	134.8	135.0	134.7	134.1
Consumer foods	135.1	137.2	141.3	142.9	139.2	139.4	139.6	139.6	139.2	138.4
Fresh fruits and melons	103.6	91.4	97.7	96.6	85.6	103.2	89.6	84.6	90.9	90.3
Fresh and dry vegetables	118.0	126.7	124.7	125.1	116.1	118.1	131.9	138.4	127.0	115.0
Dried and dehydrated fruits	121.2	122.9	118.5	118.5	118.9	119.0	119.0	119.0	119.0	119.0
Canned fruits and juices	137.8	140.0	143.6	144.3	143.3	143.7	137.4	138.9	138.9	141.8
Frozen fruits, juices and ades	123.0	120.9	114.1	111.7	114.8	115.3	115.0	119.0	119.2	120.6
Fresh vegetables except potatoes	117.7	135.0	135.2	132.3	101.7	107.2	123.2	127.1	125.4	116.5
Canned vegetables and juices	120.9	121.2	123.8	125.3	128.2	128.3	127.8	127.5	127.3	130.1
Frozen vegetables	126.1	126.0	128.6	128.8	131.2	130.7	130.0	131.5	131.0	131.5
Potatoes	126.9	100.5	128.9	151.3	218.6	203.6	222.0	244.2	177.3	135.0
Eggs for fresh use (1991=100)	77.9	84.9	81.8	71.7	71.2	66.2	85.5	76.8	86.4	77.9
Bakery products	178.0	182.3	187.7	188.4	189.6	189.3	189.4	189.4	189.6	190.0
Meats	104.6	114.3	120.3	120.8	115.2	112.9	113.6	114.3	111.8	109.1
Beef and veal	106.3	113.7	120.6	117.7	117.5	114.5	116.1	114.5	111.1	112.2
Pork	96.0	113.4	120.3	125.7	109.7	107.7	108.5	112.4	108.6	98.4
Processed poultry	114.0	112.9	116.8	121.4	110.5	112.1	112.5	112.0	109.7	111.0
Unprocessed and packaged fish	190.9	198.1	190.8	192.8	187.6	192.6	183.2	190.7	189.0	190.8
Dairy products	139.2	133.7	145.2	153.5	137.7	136.5	135.2	134.0	134.5	133.9
Processed fruits and vegetables	128.1	128.6	129.6	130.1	132.5	132.5	130.4	131.4	131.3	133.0
Shortening and cooking oil	140.4	132.4	132.9	136.1	133.3	135.8	138.7	140.5	143.7	146.5
Soft drinks	137.9	144.1	148.2	148.3	151.7	150.8	151.7	150.9	150.8	151.3
Finished consumer goods less foods	130.5	138.4	141.4	142.4	138.9	138.6	139.6	139.3	139.3	140.0
Alcoholic beverages	136.7	140.6	145.4	145.2	146.5	146.7	147.4	146.4	146.6	146.7
Apparel	127.1	127.4	126.8	126.7	125.0	125.3	125.1	124.5	124.7	124.8
Footwear	144.5	144.9	145.8	145.7	145.7	145.9	146.0	146.1	146.0	145.9
Tobacco products	374.0	397.2	441.9	447.4	465.9	466.2	466.4	466.9	466.9	466.8
Intermediate materials ³	123.2	129.2	129.7	130.1	127.2	127.1	127.9	128.1	128.5	129.4
Materials for food manufacturing	120.8	119.2	124.3	127.2	121.8	121.2	122.1	122.8	123.1	123.9
Flour	104.3	103.8	109.9	110.0	109.1	110.9	111.4	114.4	119.8	127.9
Refined sugar ⁴	121.0	110.6	109.9	110.5	118.4	116.7	118.1	117.4	117.3	118.8
Crude vegetable oils	90.2	73.6	70.1	76.2	72.3	73.8	84.3	84.5	93.5	98.4
Crude materials ⁵	98.2	120.6	121.0	107.6	108.3	109.9	106.4	106.7	108.3	108.5
Foodstuffs and feedstuffs	98.7	100.2	106.1	108.7	96.5	98.2	97.1	97.8	99.6	100.7
Fruits and vegetables and nuts ⁶	117.4	111.1	114.4	114.1	104.0	114.5	112.8	112.8	111.5	106.1
Grains	80.1	78.3	81.2	81.7	79.3	82.8	82.1	89.9	104.6	114.1
Slaughter livestock	86.4	96.5	99.6	97.6	90.1	90.3	86.6	86.4	84.9	83.1
Slaughter poultry, live	129.9	124.7	130.7	139.5	112.7	120.8	128.8	125.7	121.1	123.1
Plant and animal fibers	86.5	93.9	67.2	56.6	54.3	52.2	58.2	67.2	67.0	64.7
Fluid milk	106.3	92.0	111.8	126.8	94.2	91.2	89.0	83.7	84.4	86.6
Oilseeds	90.8	93.8	89.7	91.4	90.1	91.5	96.9	106.8	112.6	110.2
Leaf tobacco	101.6	--	105.2	110.8	--	--	--	--	107.9	106.1
Raw cane sugar	113.7	101.8	111.4	110.5	106.1	103.9	105.6	109.9	110.3	115.4

-- = Not available. 1. Commodities ready for sale to ultimate consumer. 2. Includes all raw, intermediate, and processed foods (excludes soft drinks, alcoholic beverages, and manufactured animal feeds). 3. Commodities requiring further processing to become finished goods. 4. All types and sizes of refined sugar. 5. Products entering market for the first time that have not been manufactured at that point. 6. Fresh and dried. This table is compiled with data provided by the Bureau of Labor Statistics (BLS). BLS operates a website at <http://www.bls.gov> and a Producer Prices Information Hotline at (202) 691-7705.

Farm-Retail Price Spreads

Table 8—Farm-Retail Price Spreads

	Annual			2001		2002				
	1999	2000	2001	Aug	Mar	Apr	May	Jun	Jul	Aug
Market basket										
Retail cost (1982-84=100)	167.3	170.6	177.2	177.9	181.0	180.9	180.2	179.6	179.5	179.8
Farm value (1982-84=100)	98.3	96.9	106.2	110.3	108.7	102.6	102.8	102.9	101.7	103.0
Farm-retail spread (1982-84=100)	204.5	210.3	215.4	214.3	220.0	223.0	221.9	220.9	221.5	221.2
Farm value-retail cost (%)	20.6	19.9	21.0	21.7	21.0	19.9	20.0	20.1	19.8	20.1
Meat products										
Retail cost (1982-84=100)	142.3	150.4	159.3	160.7	161.3	160.6	160.6	160.5	160.2	160.7
Farm value (1982-84=100)	81.6	88.4	97.4	99.5	101.3	101.6	101.8	101.8	102.8	103.1
Farm-retail spread (1982-84=100)	204.7	214.0	222.8	223.5	222.9	221.2	221.0	220.7	219.1	219.8
Farm value-retail cost (%)	29.0	29.8	31.0	31.4	31.8	32.0	32.1	32.1	32.5	32.5
Dairy products										
Retail cost (1982-84=100)	159.6	160.7	167.1	168.9	169.4	168.7	169.0	168.0	167.6	167.2
Farm value (1982-84=100)	107.9	98.8	118.5	129.1	101.7	100.0	98.5	94.4	91.2	90.6
Farm-retail spread (1982-84=100)	207.2	217.7	211.8	205.6	231.9	232.0	234.0	235.9	238.0	237.8
Farm value-retail cost (%)	32.4	29.5	34.0	36.7	28.8	28.4	28.0	26.9	26.1	26.0
Poultry										
Retail cost (1982-84=100)	157.9	159.8	164.9	167.5	168.0	166.9	167.0	165.6	167.2	166.1
Farm value (1982-84=100)	119.0	117.4	126.2	132.6	102.7	97.1	103.9	107.3	102.6	96.9
Farm-retail spread (1982-84=100)	202.7	208.7	209.3	207.6	243.2	247.3	239.6	232.7	241.6	245.7
Farm value-retail cost (%)	40.3	39.3	41.0	42.4	32.7	31.1	33.3	34.7	32.8	31.2
Eggs										
Retail cost (1982-84=100)	128.1	131.9	136.4	133.0	141.0	138.4	131.8	136.0	134.8	138.5
Farm value (1982-84=100)	74.9	80.6	74.3	66.0	88.5	55.2	51.0	76.5	65.5	75.5
Farm-retail spread (1982-84=100)	223.7	223.9	248.0	253.4	235.3	287.9	276.9	242.9	259.3	251.8
Farm value-retail cost (%)	37.6	39.3	35.0	31.9	40.3	25.6	24.9	36.1	31.2	35.0
Cereal and bakery products										
Retail cost (1982-84=100)	185.0	188.3	193.8	195.9	197.0	198.1	198.2	198.7	198.7	198.6
Farm value (1982-84=100)	82.5	75.2	78.8	79.1	77.3	75.1	76.1	79.1	83.6	91.3
Farm-retail spread (1982-84=100)	199.2	204.0	209.9	212.2	213.7	215.3	215.2	215.4	214.8	213.6
Farm value-retail cost (%)	5.5	4.9	5.0	4.9	4.8	4.6	4.7	4.9	5.2	5.6
Fresh fruit										
Retail cost (1982-84=100)	294.3	284.3	291.7	283.7	291.5	294.0	306.9	293.4	287.1	290.1
Farm value (1982-84=100)	153.7	141.3	145.7	142.5	157.4	152.7	151.7	131.2	129.7	150.5
Farm-retail spread (1982-84=100)	359.3	350.3	359.1	348.9	353.4	359.2	378.5	368.3	359.8	354.6
Farm value-retail cost (%)	16.5	15.7	15.8	15.9	17.1	16.4	15.6	14.1	14.3	16.4
Fresh vegetables										
Retail cost (1982-84=100)	209.3	219.4	230.6	224.9	265.3	255.9	238.6	239.3	241.8	238.9
Farm value (1982-84=100)	118.1	121.4	129.9	144.0	214.2	147.8	142.9	149.8	146.6	146.2
Farm-retail spread (1982-84=100)	256.2	269.8	282.4	266.5	291.6	311.5	287.8	285.3	290.7	286.5
Farm value-retail cost (%)	19.2	18.8	19.1	21.7	27.4	19.6	20.3	21.3	20.6	20.8
Processed fruits and vegetables										
Retail cost (1982-84=100)	154.8	153.6	159.3	161.1	162.9	164.5	165.7	164.4	166.5	170.0
Farm value (1982-84=100)	113.5	106.4	107.9	107.7	112.8	113.7	114.4	113.1	111.1	110.4
Farm-retail spread (1982-84=100)	167.7	168.3	175.3	177.8	178.5	180.3	181.7	180.4	183.8	188.6
Farm value-retail cost (%)	17.4	16.5	16.1	15.9	16.5	16.4	16.4	16.4	15.9	15.4
Fats and oils										
Retail cost (1982-84=100)	148.3	147.4	155.7	156.1	156.4	156.5	155.9	154.6	154.9	154.1
Farm value (1982-84=100)	89.0	80.9	76.9	91.9	79.6	79.0	82.7	90.6	96.0	101.2
Farm-retail spread (1982-84=100)	170.0	171.9	184.7	191.2	184.7	185.0	182.8	178.1	176.6	173.6
Farm value-retail cost (%)	16.2	14.8	13.3	20.8	13.7	13.6	14.3	15.8	16.7	17.7

See footnotes at end of table, next page.

Table 8—Farm-Retail Price Spreads (continued)

	Annual			2001			2002			
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
Beef, all fresh retail value (cents/lb.)	260.5	275.3	300.5	301.2	306.5	309.0	302.0	301.9	303.5	298.3
Beef, Choice										
Retail value (cents/lb.) ²	287.8	306.4	337.7	337.6	333.5	333.5	330.0	328.9	334.5	329.4
Wholesale value (cents/lb.) ³	171.6	182.3	192.1	186.6	182.8	180.7	178.7	172.4	174.0	175.4
Net farm value (cents/lb.) ⁴	141.1	149.0	154.5	146.9	145.6	141.4	138.6	135.4	134.9	139.2
Farm-retail spread (cents/lb.)	146.7	157.4	183.2	190.7	187.9	192.1	191.4	193.5	199.6	190.2
Wholesale-retail (cents/lb.) ⁵	116.2	124.1	145.6	151.0	150.7	152.8	151.3	156.5	160.5	154.0
Farm-wholesale (cents/lb.) ⁶	30.5	33.3	37.6	39.7	37.2	39.3	40.1	37.0	39.1	36.2
Farm value-retail value (%)	49.0	48.6	45.8	43.5	43.7	42.4	42.0	41.2	40.3	42.3
Pork										
Retail value (cents/lb.) ²	241.5	258.2	269.4	278.1	266.7	269.9	266.6	264.2	266.6	261.6
Wholesale value (cents/lb.) ³	99.0	114.5	117.8	123.9	98.2	99.3	102.6	104.0	96.8	91.2
Net farm value (cents/lb.) ⁴	60.4	79.4	81.2	82.7	58.7	61.8	66.3	72.0	60.1	47.7
Farm-retail spread (cents/lb.)	181.1	178.8	188.2	195.4	208.0	208.1	200.3	192.2	206.5	213.9
Wholesale-retail (cents/lb.) ⁵	142.5	143.7	151.6	154.2	168.5	170.6	164.0	160.2	169.8	170.4
Farm-wholesale (cents/lb.) ⁶	38.6	35.1	36.6	41.2	39.5	37.5	36.3	32.0	36.7	43.5
Farm value-retail value (%)	25.0	30.8	30.1	29.7	22.0	22.9	24.9	27.3	22.5	18.2

1. Retail costs are based on CPI-U of retail prices for domestically produced farm foods, published monthly by the Bureau of Labor Statistics (BLS). Farm value is the payment for the quantity of farm equivalent to the retail unit, less allowance for by-product. Farm values are based on prices at first point of sale, and may include marketing charges such as grading and packing for some commodities. The farm-retail spread, the difference between the retail value and farm value, represents charges for assembling, processing, transporting, and distributing. 2. Weighted-average value of retail cuts from pork and Choice yield grade 3 beef. Prices from BLS. 3. Value of wholesale (boxed beef) and wholesale cuts (pork) equivalent to 1 pound of retail cuts adjusted for transportation costs and by-product values. 4. Market value to producer for live animal equivalent to 1 lb. of retail cuts, minus value of by-products. 5. Charges for retailing and other marketing services such as wholesaling and in-city transportation. 6. Charges for livestock marketing, processing, and transportation. *Information contacts: Veronica Jones (202) 694-5387, William F. Hahn (202) 694-5175*

Table 9—Price Indexes of Food Marketing Costs

	Annual			2001				2002		
	1999	2000	2001	I	II	III	IV	I	II	III
	1987=100*									
Labor—hourly earnings and benefits	503.3	514.0	533.8	527.5	531.8	534.4	541.5	548.2	551.3	552.5
Processing	511.4	525.0	544.8	536.4	542.7	546.5	553.4	554.6	560.2	563.0
Wholesaling	564.6	589.4	615.4	606.4	611.3	618.7	625.5	625.8	627.0	630.5
Retailing	465.8	469.9	486.9	483.8	485.8	485.2	492.7	507.5	509.0	507.3
Packaging and containers	399.4	412.0	415.9	414.2	417.8	416.6	414.9	415.6	416.1	418.4
Paperboard boxes and containers	373.0	407.7	411.7	412.0	413.1	412.1	409.7	406.9	403.7	405.1
Metal cans	486.6	452.5	444.4	441.5	444.3	446.0	445.7	451.6	454.2	452.6
Paper bags and related products	440.9	470.4	475.7	474.2	481.3	474.6	472.6	473.8	474.0	478.0
Plastic films and bottles	324.2	336.7	344.2	344.0	345.8	344.4	342.6	340.2	339.7	344.4
Glass containers	447.1	450.8	469.7	460.2	471.7	473.7	473.0	480.8	494.6	500.9
Metal foil	227.3	232.4	241.4	235.5	246.1	242.7	241.4	241.6	243.1	243.3
Transportation services	394.0	394.3	404.0	401.0	403.1	406.3	405.9	405.3	405.3	406.0
Advertising	623.7	635.7	646.6	644.3	645.6	646.0	649.3	660.0	662.9	664.6
Fuel and power	651.5	841.1	803.5	830.3	826.6	826.4	730.7	699.3	748.5	788.3
Electric	489.4	498.2	532.3	514.3	526.1	559.9	529.1	516.8	526.0	544.8
Petroleum	565.9	1,135.8	912.7	998.5	974.7	937.2	740.4	678.2	808.6	879.2
Natural gas	1,235.6	1,275.4	1,354.3	1,403.3	1,391.5	1,363.3	1,259.1	1,226.6	1,247.8	1,294.1
Communications, water and sewage	309.3	309.1	313.7	312.6	312.5	314.2	315.5	317.1	315.9	319.0
Rent	256.9	258.2	257.5	259.2	257.7	257.1	256.0	254.8	253.9	253.9
Maintenance and repair	541.6	561.2	582.3	574.8	578.8	585.2	590.3	595.4	599.6	600.8
Business services	531.9	544.6	559.3	555.3	558.0	560.4	563.1	566.4	570.4	571.2
Supplies	327.7	348.5	344.8	349.2	347.0	342.8	339.1	339.1	344.5	347.4
Property taxes and insurance	619.7	654.6	691.9	680.9	687.5	695.1	704.3	711.6	716.9	722.7
Interest, short-term	103.7	115.4	61.0	91.0	64.1	55.0	33.8	32.5	32.6	28.6
Total marketing cost index	472.2	491.5	501.9	499.5	502.1	503.6	502.2	504.7	509.2	512.3

Last two quarters preliminary. * Indexes measure changes in employee earnings and benefits and in prices of supplies used in processing, wholesaling, and retailing U.S. farm foods purchased for at-home consumption. *Information contact: Veronica Jones (202) 694-5387*

Livestock & Products

Table 10—U.S. Meat Supply & Use

	Beg. stocks	Production ¹	Imports	Total supply	Exports	Ending stocks	Consumption		Conversion factor ³	Primary market price ⁴
							Total	Per capita ²		
							Lbs.			\$/cwt
							Million lbs. ⁵			
Beef										
1999	393	26,493	2,873	29,759	2,412	411	26,936	68	0.700	65.56
2000	411	26,888	3,032	30,332	2,468	525	27,338	68	0.700	69.65
2001	525	26,212	3,164	29,901	2,269	606	27,026	66	0.700	72.71
2002	606	27,189	3,306	31,101	2,468	625	28,008	68	0.700	67.02
2003	625	25,755	3,305	29,685	2,530	350	26,805	64	0.700	74.25
Pork										
1999	584	19,308	827	20,720	1,277	489	18,954	53	0.776	34.00
2000	489	18,952	967	20,407	1,287	478	18,643	51	0.776	44.70
2001	478	19,160	951	20,588	1,560	536	18,492	50	0.776	45.81
2002	536	19,781	1,057	21,374	1,563	575	19,236	52	0.776	34.08
2003	575	19,442	1,080	21,097	1,600	600	18,897	50	0.776	36.50
Veal⁶										
1999	5	235	0	240	0	5	235	1	0.83	89.62
2000	5	225	0	230	0	5	225	1	0.83	105.75
2001	5	205	0	210	0	6	204	1	0.83	106.70
2002	6	201	0	207	0	5	202	1	0.83	96.82
2003	5	195	0	200	0	5	195	1	0.83	105.56
Lamb and mutton										
1999	12	248	112	372	5	9	358	1	0.89	75.97
2000	9	234	130	372	5	13	354	1	0.89	79.40
2001	13	227	146	386	7	12	368	1	0.89	72.04
2002	12	221	178	411	5	13	393	1	0.89	70.66
2003	13	213	192	418	5	13	400	1	0.89	71.00
Total red meat										
1999	994	46,284	3,813	51,091	3,694	914	46,483	122	--	--
2000	914	46,299	4,128	51,341	3,760	1,021	46,560	121	--	--
2001	1,021	45,804	4,260	51,085	3,836	1,160	46,089	118	--	--
2002	1,160	47,392	4,541	53,093	4,036	1,218	47,839	121	--	--
2003	1,218	45,605	4,577	51,400	4,135	968	46,297	116	--	--
<i>c/lb</i>										
Broilers										
1999	711	29,468	4	30,184	4,585	796	24,803	76	0.859	58
2000	796	30,209	6	31,011	4,918	798	25,295	77	0.859	56
2001	798	30,938	14	31,749	5,557	712	25,480	76	0.859	59
2002	712	32,008	11	32,731	4,868	825	27,038	80	0.859	56
2003	825	32,647	12	33,484	5,450	775	27,259	80	0.859	59
Mature chickens										
1999	6	554	0	562	393	8	162	1	1	--
2000	8	531	0	540	220	9	311	1	1	--
2001	9	515	0	528	182	8	337	1	1	--
2002	8	540	0	550	148	8	394	1	1	--
2003	8	520	0	529	160	8	361	1	1	--
Turkeys										
1999	304	5,230	1	5,535	378	254	4,902	18	1	69
2000	254	5,333	1	5,589	445	241	4,902	17	1	71
2001	241	5,489	1	5,732	487	241	5,003	18	1	66
2002	241	5,584	1	5,826	456	325	5,044	17	1	65
2003	325	5,601	1	5,927	490	325	5,111	18	1	67
Total poultry										
1999	1,022	35,252	7	36,281	5,356	1,058	29,867	94	--	--
2000	1,058	36,073	9	37,140	5,584	1,048	30,508	95	--	--
2001	1,048	36,942	18	38,008	6,226	961	30,820	95	--	--
2002	961	38,131	15	39,107	5,472	1,158	32,476	99	--	--
2003	1,158	38,767	15	39,940	6,100	1,108	32,731	99	--	--
Red meat and poultry										
1999	2,016	81,537	3,820	87,372	9,050	1,971	76,351	216	--	--
2000	1,971	82,372	4,137	88,481	9,344	2,069	77,069	216	--	--
2001	2,069	82,746	4,278	89,093	10,062	2,121	76,910	213	--	--
2002	2,121	85,523	4,556	92,200	9,508	2,376	80,315	220	--	--
2003	2,376	84,372	4,592	91,340	10,235	2,076	79,028	215	--	--

-- = Not available. Values for the last 2 years are forecasts. 1. Total including farm production for red meat and federally inspected plus nonfederally inspected for poultry. 2. Retail-weight basis. 3. Red meat, carcass to retail conversion; poultry, ready-to-cook production to retail weight. 4. Beef: Medium #1, Nebraska Direct 1,100-1,300 lb.; pork: barrows and gilts, Iowa, Southern Minnesota; veal: farm price of calves; lamb and mutton: choice slaughter lambs, San Angelo; broilers: wholesale 12-city average; turkeys: wholesale NY 8-16 lb. young hens. 5. Carcass weight for red meats and certified ready-to-cook for poultry. 6. Beginning in 1989, veal trade is no longer reported separately. *Information contact: LaVerne Williams (202) 694-5190*

Table 11—U.S. Egg Supply & Use

	Beg. stocks	Production	Imports	Total supply	Exports	Hatching use	Ending stocks	Consumption		Primary market price*
								Total	Per capita	
Million doz.								No.	¢/doz.	
1996	11.2	6,350.7	5.4	6,367.3	253.1	863.8	8.5	5,241.8	234.6	88.2
1997	8.5	6,473.1	6.9	6,488.5	227.8	894.7	7.4	5,358.6	235.8	81.2
1998	7.4	6,657.9	5.8	6,671.2	218.8	921.8	8.4	5,522.2	240.1	75.8
1999	8.4	6,912.0	7.4	6,927.8	161.9	941.7	7.6	5,816.6	250.0	65.6
2000	7.6	7,033.5	8.4	7,049.5	171.1	940.2	11.4	5,926.8	251.8	68.9
2001	11.4	7,152.0	8.9	7,172.2	190.0	953.0	10.4	6,018.8	252.6	67.2
2002	10.4	7,216.0	11.8	7,238.2	182.5	968.5	12.0	6,075.2	252.1	66.5
2003	12.0	7,230.0	8.0	7,250.0	168.0	1,000.0	12.0	6,070.0	249.5	66.8

Values for the last year are forecasts. Values for previous year are preliminary. * Cartoned grade A large eggs, New York. Information contact: LaVerne Williams (202) 694-5190

Table 12—U.S. Milk Supply & Use

Production	Commercial			Imports	Total commercial supply	Commercial				CCC net removals		
	Farm use	Farm marketings	Beg. stocks			CCC net removals	Ending stocks	Disappearance	All milk price ¹	Skim solids basis	Total solids basis ²	
Million lbs. (milkfat basis)										\$/cwt	Billion lbs.	
1995	155.3	1.6	153.7	4.3	2.9	160.9	2.1	4.1	154.9	12.74	4.4	3.5
1996	154.0	1.5	153.5	4.1	2.9	159.5	0.1	4.7	154.7	14.74	0.7	0.5
1997	156.1	1.4	154.7	4.7	2.7	162.1	1.1	4.9	156.1	13.34	3.7	2.7
1998	157.4	1.4	156.1	4.9	4.6	165.5	0.4	5.3	159.9	15.42	4.0	2.6
1999	162.7	1.4	161.3	5.3	4.7	171.4	0.3	6.1	164.9	14.36	6.5	4.0
2000	167.6	1.3	166.2	6.1	4.4	176.8	0.8	6.9	169.1	12.40	8.6	5.5
2001	165.3	1.3	164.1	6.8	5.7	176.6	0.2	7.0	169.4	14.93	5.8	3.5
2002	169.8	1.2	168.6	7.0	4.9	180.5	0.3	8.5	171.7	12.20	10.1	6.2
2003	171.4	1.2	170.3	8.5	4.8	183.6	0.7	6.6	176.2	12.40	6.8	4.4

Values for latest year are forecasts. Values for the preceding year are preliminary. 1. Delivered to plants and dealers; does not reflect deductions. 2. Arbitrarily weighted average of milkfat basis (40 percent) and solids basis (60 percent). Information contact: Jim Miller (202) 694-5184

Table 13—Poultry & Eggs

	Annual			2001		2002				
	1999	2000	2001	Aug	Mar	Apr	May	Jun	Jul	Aug
Broilers										
Federally inspected slaughter certified (mil. lb.)	29,741.4	30,495.2	31,265.8	2,850.7	2,593.6	2,764.9	2,899.1	2,585.2	2,827.3	2,800.5
Wholesale price, 12-city (cents/lb.)	58.1	56.2	59.1	60.9	55.2	53.5	56.4	58.4	57.5	55.7
Price of grower feed (\$/ton) ¹	103.1	104.7	101.3	107.7	101.6	101.7	104.9	110.0	119.2	126.1
Broiler-feed price ratio ²	7.2	6.6	7.8	7.8	6.3	5.9	6.1	6.0	5.2	4.6
Stocks beginning of period (mil. lb.)	711.1	795.6	797.6	633.8	721.0	802.6	847.1	829.0	848.3	861.4
Broiler-type chicks hatched (mil.)	8,715.4	8,846.2	6,048.4	771.6	790.3	765.0	798.3	776.4	781.4	779.8
Turkeys										
Federally inspected slaughter certified (mil. lb.)	5,296.5	5,402.2	5,561.7	494.9	449.9	494.1	499.7	453.7	485.6	480.4
Wholesale price, Eastern U.S. 8-16 lb. young hens (cents/lb.)	69.0	70.5	66.3	66.4	59.0	59.5	63.5	65.7	66.5	66.6
Price of turkey grower feed (\$/ton) ¹	95.0	95.9	95.8	99.2	96.8	95.9	98.6	102.5	111.0	120.3
Turkey-feed price ratio ²	8.6	8.7	8.2	7.8	6.8	6.8	7.2	7.2	6.9	6.3
Stocks beginning of period (mil. lb.)	304.3	254.3	241.3	534.2	409.9	456.3	516.0	578.9	644.1	705.4
Poultz placed in U.S. (mil.)	296.1	297.3	301.6	25.0	25.7	26.2	25.6	24.4	25.6	24.7
Eggs										
Farm production (mil.)	82,944.0	84,393.0	85,819.0	7,221.0	7,395.0	7,081.0	7,274.0	7,116.0	7,341.0	7,354.0
Average number of layers (mil.)	322.9	328.3	335.4	332.8	336.6	335.7	334.9	335.0	335.3	336.0
Rate of lay (eggs per layer on farms)	256.8	257.1	255.8	21.7	22.0	21.1	21.7	21.2	21.9	21.9
Cartoned price, New York, grade A large (cents/doz.) ³	65.6	68.9	67.1	62.8	76.9	55.8	53.3	66.1	64.6	66.7
Price of laying feed (\$/ton) ¹	124.6	123.6	123.4	134.8	118.1	142.2	153.0	133.1	153.6	155.5
Egg-feed price ratio ²	9.8	10.6	9.9	8.4	11.6	7.3	6.6	9.5	7.5	8.0
Stocks, first of month										
Frozen (mil. doz.)	8.4	7.6	11.4	10.9	10.6	8.9	7.8	8.4	9.7	9.8
Replacement chicks hatched (mil.)	451.7	430.4	315.3	38.6	36.7	38.2	38.9	35.3	35.2	35.9

1. Calculated from price ratios that were revised February 1995. 2. Pounds of feed equal in value to 1 dozen eggs or 1 lb. of broiler or turkey liveweight (revised February 1995). 3. Price of cartoned eggs to volume buyers for delivery to retailers. Information contact: LaVerne Williams (202) 694-5190

Table 14—Dairy

	Annual			2001				2002			
	1999	2000	2001	Aug	Mar	Apr	May	Jun	Jul	Aug	
Class III (BFP before 2000) 3.5% fat (\$/cwt.)	12.43	9.74	13.10	15.55	10.65	10.85	10.82	10.09	9.33	9.54	
Wholesale prices											
Butter, Central States (cents/lb.) ¹	125.2	118.5	167.7	204.5	126.4	120.8	109.2	105.8	104.0	101.6	
Am. cheese, Wis. assembly pt. (cents/lb.)	142.3	116.2	144.9	171.8	122.2	125.8	122.1	115.1	109.7	116.5	
Nonfat dry milk (cents/lb.) ²	103.5	101.6	100.8	99.0	92.2	90.6	91.7	92.1	92.7	93.2	
USDA net removals											
Total (mil. lb.) ³	343.5	841.4	151.7	11.1	18.6	21.6	25.2	19.1	24.9	62.4	
Butter (mil. lb.)	3.7	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Am. cheese (mil. lb.)	4.6	28.0	4.6	0.8	0.0	0.0	0.0	0.0	0.7	5.7	
Nonfat dry milk (mil. lb.)	540.6	692.6	496.1	14.9	85.7	98.2	114.7	87.0	84.6	43.4	
Milk											
Milk prod. 20 states (mil. lb.)	140,062	144,535	142,817	11,754	12,771	12,555	13,021	12,315	12,306	12,232	
Milk per cow (lb.)	18,109	18,533	18,438	1,520	1,649	1,619	1,677	1,583	1,581	1,570	
Number of milk cows (1,000)	7,734	7,799	7,746	7,735	7,744	7,754	7,764	7,779	7,783	7,790	
U.S. milk production (mil. lb.) ⁴	162,716	167,559	165,336	13,564	14,818	14,569	15,105	14,280	14,235	14,144	
Stocks, beginning ⁵											
Total (mil. lb.)	5,302	6,186	7,010	10,288	9,393	9,866	11,255	12,141	12,637	13,009	
Commercial (mil. lb.)	5,274	6,142	6,871	10,018	9,148	9,609	10,968	11,837	12,317	12,701	
Government (mil. lb.)	28	44	139	270	245	257	287	304	319	308	
Imports, total (mil. lb.) ³	4,772	4,445	5,716	598	421	386	412	457	504	420	
Commercial disappearance (mil. lb.) ³	164,947	169,132	169,434	15,061	14,655	13,473	14,519	14,137	14,226	14,987	
Butter											
Production (mil. lb.)	1,277.1	1,256.0	1,236.8	75.6	129.0	132.4	126.5	96.9	94.0	88.5	
Stocks, beginning (mil. lb.)	25.9	24.9	24.0	150.3	129.4	144.4	197.1	224.6	241.0	243.3	
Commercial disappearance (mil. lb.)	1,310.7	1,280.0	1,280.8	121.3	117.9	82.3	101.0	83.6	94.7	107.5	
American cheese											
Production (mil. lb.)	3,532.6	3,641.6	3,519.2	281.5	318.2	316.8	326.2	310.3	301.2	304.5	
Stocks, beginning (mil. lb.)	407.6	458.0	521.1	526.3	484.3	497.4	507.6	530.5	544.9	570.5	
Commercial disappearance (mil. lb.)	3,542.2	3,595.8	3,656.0	315.7	308.9	309.1	309.4	312.2	288.9	316.9	
Other cheese											
Production (mil. lb.)	4,361.5	4,616.4	4,609.9	378.5	401.3	382.5	397.9	378.7	370.0	381.0	
Stocks, beginning (mil. lb.)	109.5	163.3	185.2	224.6	230.6	232.5	246.4	252.1	246.8	257.5	
Commercial disappearance (mil. lb.)	4,672.1	4,959.1	4,952.3	411.7	429.5	405.8	425.8	410.9	393.9	435.8	
Nonfat dry milk											
Production (mil. lb.)	1,359.7	1,451.8	1,413.8	96.1	147.8	158.3	158.1	147.6	123.7	113.7	
Stocks, beginning (mil. lb.)	56.9	150.9	146.3	147.2	142.5	157.8	160.8	165.8	173.7	137.8	
Commercial disappearance (mil. lb.)	737.2	770.6	946.2	119.7	47.0	57.6	41.1	54.3	78.4	103.2	
Frozen dessert											
Production (mil. gal.) ⁵	1,301.0	1,304.9	1,325.4	124.5	113.1	121.4	121.3	126.4	127.4	119.9	
	Annual			2001				2002			
	1999	2000	2001	I	II	III	IV	I	II	III	
Milk production (mil. lb.)	162,716	167,559	165,336	41,267	42,681	40,570	40,818	42,256	43,954	41,965	
Milk per cow (lb.)	17,772	18,201	18,139	4,514	4,683	4,459	4,483	4,639	4,806	4,582	
No. of milk cows (1,000)	9,156	9,206	9,115	9,143	9,114	9,098	9,105	9,109	9,145	9,159	
Milk-feed price ratio	2.03	1.75	--	--	--	--	--	--	--	--	
Returns over concentrate costs (\$/cwt milk)	11.40	9.40	--	--	--	--	--	--	--	--	

-- = Not available. Quarterly values for latest year are preliminary. 1. Grade AA Chicago before June 1998. 2. Prices paid f.o.b. Central States production area. 3. Milk equivalent, fat basis. 4. Monthly data ERS estimates. 5. Hard ice cream, ice milk, and hard sherbet. *Information contact: LaVerne Williams (202) 694-5190*

Table 15—Wool

	Annual			2001				2002	
	1999	2000	2001	I	II	III	IV	I	II
U.S. wool price (¢/lb.) ¹	110	108	121	101	130	125	126	151	190
Imported wool price (¢/lb.) ²	136	137	160	151	155	167	168	233	251
U.S. mill consumption, scoured									
Apparel wool (1,000 lb.)	63,535	62,041	52,969	17,003	13,519	11,584	10,863	10,969	10,471
Carpet wool (1,000 lb.)	13,950	15,205	13,010	4,280	3,791	2,919	2,320	1,856	1,860

-- = Not available. 1. Wool price delivered at U.S. mills, clean basis, Graded Territory 64's (20.60-22.04 microns) staple 2-3/4" and up. 2. Wool price, Charleston, SC warehouse, clean basis, Australian 60/62's, type 64A (24 micron). Duty since 1982 has been 10 cents. *Information contact: Wilma L. Davis (202) 694-5304*

Table 16—Meat Animals

	Annual		2001		2002					
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
Cattle on feed (7 states, 1000+ head capacity)										
Number on feed (1,000 head) ¹	9,021	9,752	10,076	9,383	9,934	9,389	9,449	9,056	8,750	8,845
Placed on feed (1,000 head)	21,446	21,875	21,145	1,811	1,235	1,990	1,422	1,619	1,936	1,853
Marketings (1,000 head)	20,124	20,674	19,955	1,541	1,709	1,864	1,773	1,889	1,806	1,565
Other disappearance (1,000 head)	676	702	774	40	71	66	42	36	35	45
Market prices (\$/cwt)										
Slaughter cattle										
Choice steers, 1,100-1,300 lb.										
Texas	65.89	69.86	71.98	68.75	67.63	65.49	63.85	63.57	63.41	65.63
Neb. direct	65.56	69.65	72.43	69.16	67.79	65.32	63.64	62.49	62.96	64.43
Boning utility cows, Sioux Falls	38.40	41.71	44.49	44.13	42.88	42.45	41.50	37.63	37.50	37.94
Feeder steers										
Medium no. 1, Oklahoma City										
600-650 lb.	82.64	94.31	95.29	97.14	92.00	88.53	80.89	82.36	83.99	83.29
750-800 lb.	76.39	86.14	88.20	91.64	77.32	76.74	77.42	77.52	76.68	80.41
Slaughter hogs										
Barrows and gilts, 51-52 percent lean										
National Base converted to live equal.	34.00	44.70	45.81	46.93	33.01	34.72	37.36	40.60	34.00	26.98
Sows, Iowa, S.MN 1-2 300-400 lb.	19.26	29.79	33.98	33.12	24.39	25.41	21.11	21.04	20.87	15.38
Slaughter sheep and lambs										
Lambs, Choice, San Angelo										
Ewes, Good, San Angelo	42.45	46.23	45.66	38.04	40.10	38.00	34.83	35.42	36.55	35.58
Feeder lambs										
Choice, San Angelo										
	80.74	95.86	89.38	69.13	85.00	78.83	74.75	79.33	77.30	76.13
Wholesale meat prices, Midwest										
Boxed beef cut-out value										
Choice, 700-800 lb.										
Select, 700-800 lb.	101.91	108.83	114.42	108.21	109.77	106.16	107.22	105.14	102.94	101.91
Canner and cutter cow beef										
	66.51	72.57	--	--	--	--	--	--	--	--
Pork cutout										
	53.45	64.07	66.83	69.61	50.55	51.90	54.40	58.48	52.61	45.88
Pork loins, bone-in, 1/4" trim, 14-19 lb.										
	100.38	117.13	116.97	116.21	94.13	101.71	104.80	108.64	97.85	87.17
Pork bellies, 12-14 lb.										
	57.12	77.46	78.61	81.91	63.48	58.85	65.90	81.06	67.98	57.05
Hams, bone-in, trimmed, 20-23 lb.										
	45.18	52.02	56.86	63.50	35.15	33.10	34.36	42.09	35.93	37.40
All fresh beef retail price	260.50	275.30	275.30	301.20	306.50	309.00	302.00	301.90	303.50	298.30
Commercial slaughter (1,000 head) ²										
Cattle										
Steers	17,932	18,063	17,386	1,380	1,476	1,640	1,620	1,681	1,692	1,444
Heifers	11,868	12,039	11,576	948	964	988	943	976	980	903
Cows	5,710	5,520	5,774	429	255	464	446	479	485	466
Bull and stags	639	624	632	51	53	54	54	51	56	52
Calves	1,282	1,132	1,007	79	82	78	76	96	96	89
Sheep and lambs	3,701	3,460	3,222	244	278	284	230	258	265	276
Hogs										
Barrows and gilts	97,732	94,604	94,588	7,546	8,144	8,027	7,251	7,750	8,215	8,220
Commercial production (mil. lb.)										
Beef	26,385	26,776	26,108	2,121	2,194	2,336	2,303	2,426	2,470	2,201
Veal	224	215	194	15	16	15	15	17	17	16
Lamb and mutton	243	232	224	16	19	20	15	16	17	18
Pork	19,278	18,929	19,139	1,513	1,673	1,647	1,480	1,557	1,637	1,638
Annual										
2001										
2002										
1999										
2000										
2001										
II										
III										
IV										
I										
II										
III										
IV										
Hogs and pigs (U.S.) ³										
Inventory (1,000 head) ¹										
Breeding (1,000 head) ¹	6,682	6,234	6,270	6,232	6,186	6,158	6,209	6,336	6,209	6,054
Market (1,000 head) ¹	55,523	53,109	52,868	51,292	52,417	53,619	53,594	53,011	53,978	54,165
Farrowings (1,000 head)	11,641	11,462	11,303	2,870	2,878	2,889	2,837	2,933	2,834	2,818
Pig crop (1,000 head)	102,354	101,354	99,473	25,509	25,539	25,492	24,807	25,851	25,128	--
Cattle on Feed, 7 states (1,000 head) ^{1,4}										
Steers and steer calves	5,432	5,768	5,936	5,885	5,521	5,690	6,077	6,180	5,541	5,411
Heifers and heifer calves	3,552	3,942	4,081	3,913	3,894	3,882	3,769	3,718	3,474	3,616
Cows and bulls	37	42	59	61	51	41	64	36	41	61

-- = Not available. 1. Beginning of period. 2. Classes estimated. 3. Quarters are Dec. of preceding year to Feb. (I), Mar.-May (II), June-Aug. (III), and Sept.-Nov. (IV). 4. The 7 states include AZ, CA, CO, IA, KS, NE, and TX. Information contact: Leland Southard (202) 694-5187

Crops & Products

Table 17—Supply & Utilization^{1,2}

	Area		Yield	Production	Total supply ⁴	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price ⁵
	Planted	Harvested									
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
Wheat											
1998/99	65.8	59.0	43.2	2,547	3,373	391	990	1,046	2,427	946	2.65
1999/00	62.7	53.8	42.7	2,299	3,339	288	1,013	1,089	2,390	950	2.48
2000/01	62.6	53.1	42.0	2,232	3,272	304	1,029	1,062	2,396	876	2.62
2001/02*	59.6	48.6	40.2	1,957	2,941	193	1,009	961	2,164	777	2.78
2002/03*	60.4	46.0	35.3	1,625	2,487	150	1,016	950	2,116	371	3.55-3.95
Rice⁶											
	<i>Mil. acres</i>	<i>Lb./acre</i>					<i>Mil. cwt (rough equiv)</i>				<i>\$/cwt</i>
1998/99	3.3	3.3	5,663	184.4	223.0	--	6/ 114.0	86.8	200.9	22.1	8.89
1999/00	3.5	3.5	5,866	206.0	238.2	--	6/ 121.9	88.8	210.7	27.5	5.93
2000/01	3.1	3.0	6,281	190.9	229.2	--	6/ 117.5	83.2	200.7	28.5	5.61
2001/02*	3.3	3.3	6,429	213.0	254.7	--	6/ 121.7	94.1	215.8	39.0	4.17
2002/03*	3.2	3.2	6,608	211.9	263.9	--	6/ 125.0	97.0	222.0	41.9	3.50-4.00
Corn											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1998/99	80.2	72.6	134.4	9,759	11,085	5,468	1,846	1,984	9,298	1,787	1.94
1999/00	77.4	70.5	133.8	9,431	11,232	5,665	1,913	1,937	9,515	1,718	1.82
2000/01	79.6	72.4	136.9	9,915	11,639	5,842	1,957	1,941	9,740	1,899	1.85
2001/02*	75.8	68.8	138.2	9,507	11,416	5,862	2,054	1,900	9,817	1,599	1.97
2002/03*	78.8	70.5	127.2	8,970	10,584	5,650	2,170	2,000	9,820	764	2.30-2.70
Sorghum											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1998/99	9.6	7.7	67.3	520	569	262	45	197	504	65	1.66
1999/00	9.3	8.5	69.7	595	660	285	55	255	595	65	1.57
2000/01	9.2	7.7	60.9	471	536	222	35	237	494	42	1.89
2001/02*	10.3	8.6	59.9	515	556	212	45	240	497	59	1.95
2002/03*	9.3	7.5	51.4	387	446	135	45	220	400	46	2.30-2.70
Barley											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1998/99	6.3	5.9	60.0	352	501	161	170	29	360	142	1.98
1999/00	5.2	4.7	59.2	280	450	138	172	28	338	111	2.13
2000/01	5.9	5.2	61.1	319	459	123	172	58	353	106	2.11
2001/02*	5.0	4.3	58.2	249	380	88	172	27	287	93	2.22
2002/03*	5.1	4.1	54.9	227	345	80	172	20	272	73	2.40-2.80
Oats											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1998/99	4.9	2.8	60.2	166	348	196	69	2	266	81	1.10
1999/00	4.7	2.5	59.6	146	326	180	68	2	250	76	1.12
2000/01	4.5	2.3	64.2	150	332	189	68	2	259	73	1.10
2001/02*	4.4	1.9	61.4	117	286	148	72	3	223	63	1.59
2002/03*	5.0	2.1	56.8	119	282	150	72	2	224	58	1.65-1.95
Soybeans⁷											
	<i>Mil. acres</i>	<i>Bu./acre</i>					<i>Mil. bu.</i>				<i>\$/bu.</i>
1998/99	72.0	70.4	38.9	2,741	2,944	201	1,590	805	2,595	348	4.93
1999/00	73.7	72.4	36.6	2,654	3,006	164	1,578	975	2,716	290	4.63
2000/01	74.3	72.4	38.1	2,758	3,052	168	1,640	996	2,804	248	4.54
2001/02*	74.1	73.0	39.6	2,891	3,141	168	1,700	1,065	2,933	208	4.35
2002/03*	73.0	71.8	37.0	2,654	2,865	165	1,675	850	2,690	175	5.05-5.95
Soybean oil											
							<i>Mil. lbs.</i>				<i>¢/lb.</i>
1998/99	--	--	--	18,081	19,546	--	15,655	2,372	18,027	1,520	19.90
1999/00	--	--	--	17,825	19,426	--	16,056	1,375	17,431	1,995	15.60
2000/01	--	--	--	18,420	20,488	--	16,210	1,401	17,611	2,877	14.15
2001/02*	--	--	--	18,865	21,785	--	16,900	2,500	19,400	2,385	16.50
2002/03*	--	--	--	18,930	21,380	--	17,350	2,400	19,750	1,630	19.00-22.00
Soybean meal											
							<i>1,000 tons</i>				<i>\$/ton⁸</i>
1998/99	--	--	--	37,792	38,109	--	30,657	7,122	37,779	330	138.5
1999/00	--	--	--	37,591	37,970	--	30,345	7,332	37,678	293	167.7
2000/01	--	--	--	39,385	39,729	--	31,643	7,703	39,346	383	173.6
2001/02*	--	--	--	40,332	40,825	--	33,000	7,600	40,600	225	168.0
2002/03*	--	--	--	39,885	40,350	--	33,500	6,600	40,100	250	165-195

See footnotes at end of table, next page

Table 17—Supply & Utilization (continued)

	Area		Yield	Production	Total supply ³	Feed & residual	Other domestic use	Exports	Total use	Ending stocks	Farm price ⁴
	Planted	Harvested									
	<i>Mil. acres</i>	<i>Lb./acre</i>									
											<i>Mil. bales</i>
											<i>¢/lb.</i>
Cotton ⁸											
1998/99	13.4	10.7	625	13.9	18.2	--	10.4	4.3	14.7	3.9	60.2
1999/00	14.9	13.4	607	17.0	21.0	--	10.2	6.8	16.9	3.9	45.0
2000/01	15.5	13.1	632	17.2	21.1	--	8.9	6.8	15.6	6.0	49.8
2001/02*	15.8	13.8	705	20.3	26.3	--	7.7	11.0	18.7	7.6	31.5
2002/03*	14.4	12.9	674	18.1	25.8	--	7.9	11.0	18.9	6.7	--

-- = Not available/applicable. *October 12, 2002 Supply and Demand Estimates. 1. Marketing year beginning June 1 for wheat, barley and oats; August 1 for cotton and rice; September 1 for soybeans, corn, and sorghum; October 1 for soybean and soyoil. 2. Conversion factors: hectare (ha.) = 2.471 acres, 1 metric ton = 2,204.622 pounds, 36.7437 bushels of wheat or soybeans, 39.3679 bushels of corn or sorghum, 45.9296 bushels of barley, 68.8944 bushels of oats, 22.046 cwt of rice, and 4.59 480-pound bales of cotton. 3. Includes imports. 4. Marketing-year weighted average price received by farmers. Does not include an allowance for loans outstanding and government purchases. 5. Residual included in domestic use. 6. Includes seed. 7. Simple average of 48 percent protein, Decatur. 8. Upland and extra-long staple. Stocks estimates based on Census Bureau data, resulting in an unaccounted difference between supply and use estimates. For 2001/02, cotton price is the average for August 2001-August 2002. USDA is prohibited by law from publishing cotton price projections. *Information contact: Wilma Davis (202) 694-5304*

Table 18—Cash Prices, Selected U.S. Commodities

	Marketing year ¹			2001		2002				
	1998/99	1999/2000	2000/01	Sep	Apr	May	Jun	Jul	Aug	Sep
Wheat, no. 1 HRW, Kansas City (\$/bu.) ²	2.67	2.87	3.30	3.18	3.24	3.21	3.55	3.92	4.29	5.04
Wheat, DNS, Minneapolis (\$/bu.) ³	3.83	3.65	3.62	3.52	3.55	3.59	3.64	4.03	4.37	5.24
Rice, S.W. La. (\$/cwt) ⁴	16.79	12.99	12.46	10.97	9.25	9.15	9.13	9.13	9.13	9.25
Corn, no. 2 yellow, 30-day, Chicago (\$/bu.)	2.06	1.97	1.99	2.10	2.03	2.08	2.15	2.33	2.63	2.70
Sorghum, no. 2 yellow, Kansas City (\$/cwt)	3.29	3.10	3.41	3.55	3.47	3.44	3.57	3.97	4.60	4.86
Barley, feed, Duluth (\$/bu.)	-	-	--	1.48	1.55	1.55	1.55	1.55	1.74	1.80
Barley, malting Minneapolis (\$/bu.)	-	-	--	2.34	2.47	2.45	2.48	2.56	2.69	--
U.S. cotton price, SLM, 1-1/16 in. (¢/lb.) ⁵	60.12	52.36	51.56	33.22	31.86	31.14	36.36	39.78	39.20	37.91
Northern Europe prices cotton index (¢/lb.) ⁶	72.11	52.85	57.25	41.13	41.61	40.01	43.43	46.75	49.46	49.08
U.S. M 1-3/32 in. (¢/lb.) ⁷	74.08	59.64	62.54	46.06	45.00	42.55	46.25	49.81	50.90	48.75
Soybeans, no. 1 yellow, 15-day ⁸ Chicago (\$/bu)	4.88	4.82	4.67	4.59	4.66	4.82	5.09	5.70	5.67	5.65
Soybean oil, crude, Decatur (¢/lb.)	19.80	15.59	14.10	15.46	15.31	15.99	17.69	19.12	20.61	20.33
Soybean meal, high protein, Decatur (\$/ton)	138.55	167.62	173.62	171.67	161.60	164.30	170.35	187.50	186.25	185.45

-- = Not available. 1. Beginning June 1 for wheat and barley; Aug. 1 for rice and cotton; Sept. 1 for corn, sorghum, and soybeans; Oct. 1 for soybean and oil. 2. Ordinary protein. 3. 14 percent protein. 4. Long grain, milled basis. 5. Average spot market. 6. Liverpool Cotlook "A" Index; average of 5 lowest priced growth. 7. Cotton, Memphis territory growth. 8. Soybean 30-day price discontinued. *Information contact: Wilma Davis (202) 694-5304*

Table 19—Farm Programs, Price Supports, Participation, & Payment Rates

	Marketing assistance loan rate	Marketing loan benefit ¹	Flexibility contract payment rate	Acres under contract	Contract payment yields
				<i>Mil. acres</i>	<i>Bu./acre</i>
Wheat					
		<i>\$/bu.</i>			
1997/98	2.58	0.01	0.631	76.7	34.70
1998/99	2.58	0.19	0.663	78.9	34.50
1999/2000	2.58	0.41	0.637	79.0	34.50
2000/2001	2.58	--	0.588	78.9	34.50
2001/2002 ²	2.58	--	0.474	78.2	34.60
<i>Cwt/acre</i>					
Rice					
		<i>\$/cwt</i>			
1997/98	6.50	0.00	2.710	4.2	48.17
1998/99	6.50	0.08	2.921	4.2	48.17
1999/2000	6.50	1.94	2.820	4.2	48.15
2000/2001	6.50	--	2.600	4.1	48.15
2001/2002 ²	6.50	--	2.100	4.1	48.15
<i>Bu./acre</i>					
Corn					
		<i>\$/bu.</i>			
1997/98	1.89	0.01	0.486	80.9	102.80
1998/99	1.89	0.14	0.377	82.0	102.60
1999/2000	1.89	0.26	0.363	81.9	102.60
2000/2001	1.89	--	0.334	81.9	102.60
2001/2002 ²	1.89	--	0.269	81.5	102.70
<i>Bu./acre</i>					
Sorghum					
		<i>\$/bu.</i>			
1997/98	1.76	0.00	0.544	13.1	57.30
1998/99	1.74	0.12	0.452	13.6	56.90
1999/2000	1.74	0.26	0.435	13.7	56.90
2000/2001	1.71	--	0.400	13.6	57.00
2001/2002 ²	1.71	--	0.324	13.5	57.00
<i>Bu./acre</i>					
Barley					
		<i>\$/bu.</i>			
1997/98	1.57	0.01	0.277	10.5	47.20
1998/99	1.56	0.23	0.284	11.2	46.70
1999/2000	1.59	0.14	0.271	11.2	46.60
2000/2001	1.62	--	0.251	11.2	46.60
2001/2002 ²	1.65	--	0.206	11.0	46.60
<i>Bu./acre</i>					
Oats					
		<i>\$/bu.</i>			
1997/98	1.11	0.00	0.031	6.2	50.80
1998/99	1.11	0.18	0.031	6.5	50.70
1999/2000	1.13	0.19	0.030	6.5	50.60
2000/2001	1.16	--	0.028	6.5	50.60
2001/2002 ²	1.21	--	0.022	6.5	50.60
<i>Bu./acre</i>					
Soybeans³					
		<i>\$/bu.</i>			
1997/98	5.26	0.01	--	--	--
1998/99	5.26	0.45	--	--	--
1999/2000	5.26	0.88	--	--	--
2000/2001	5.26	--	--	--	--
2001/2002	5.26	--	--	--	--
<i>Lb./acre</i>					
Upland cotton					
		<i>¢/lb.</i>			
1997/98	51.92	0.00	7.625	16.2	608.00
1998/99	51.92	0.09	8.173	16.4	604.00
1999/2000	51.92	0.20	7.880	16.4	604.00
2000/2001	51.92	--	7.330	16.3	604.00
2001/2002 ²	51.92	--	5.990	16.2	605.80

-- = Not available. 1. Weighted average, based on portions of crop receiving marketing loan gains, loan deficiency payments, and no benefits (calculated by Economic Research Service). 2. Estimated payment rates and acres under contract. 3. There are no flexibility contract payments for soybeans.

Information contact: Brenda Chewning, Farm Service Agency (202) 720-8638

Table 20—Fruit

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Citrus¹										
Production (1,000 tons)	15,274	14,561	15,799	15,712	17,271	17,770	13,633	17,276	16,216	16,392
Per capita consumpt. (lb.) ²	25.8	24.7	23.8	24.6	26.5	26.6	20.3	23.4	24.3	23.9
Noncitrus³										
Production (1,000 tons)	16,554	17,339	16,348	16,103	18,363	16,545	17,331	18,923	16,822	--
Per capita consumpt. (lb.) ²	73.3	74.8	72.6	72.7	74.7	75.0	79.9	77.1	73.3	--
	2001					2002				
	Sep	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Grower prices										
Apples (¢/pound) ⁴	21.20	22.10	21.60	22.00	21.80	21.50	22.00	20.60	24.50	30.00
Pears (¢/pound) ⁴	20.75	14.10	13.80	13.35	13.35	13.35	16.85	15.60	23.00	23.70
Oranges (\$/box) ⁵	6.20	3.89	4.42	4.88	4.30	4.82	4.13	3.90	6.61	6.31
Grapefruit (\$/box) ⁵	6.88	1.98	1.70	1.23	1.02	1.05	4.16	6.36	5.60	5.81
Stocks, ending										
Fresh apples (mil. lb.)	2,806	3,629	2,958	2,221	1,550	1,043	644	316	90	2,824
Fresh pears (mil. lb.)	554	239	188	136	80	43	13	30	119	399
Frozen fruits (mil. lb.)	1,102	1,012	947	862	788	784	895	1,016	1,048	1,006
Frozen conc. orange juice (mil. single-strength gallons)	628	704	724	734	768	809	789	764	686	626

-- = Not available. 1. Year shown is when harvest concluded. 2. Fresh per capita consumption. 3. Calendar year. 4. Fresh use.

5. U.S. equivalent on-tree returns. *Information contact: Susan Pollack (202) 694-5251*

Table 21—Vegetables

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Production¹										
Total vegetables (1,000 cwt)	692,022	785,798	751,715	765,645	763,532	732,803	833,622	822,475	780,134	--
Fresh (1,000 cwt) ^{2,4}	390,528	416,173	397,125	412,010	436,459	420,012	449,683	479,223	477,212	--
Processed (tons) ^{3,4}	15,074,707	18,481,238	17,729,497	17,681,732	16,353,639	15,639,548	19,196,942	17,162,580	15,146,100	--
Mushrooms (1,000 lbs) ⁵	750,799	782,340	777,870	776,677	808,678	847,760	854,394	846,209	837,866	--
Potatoes (1,000 cwt)	430,349	469,425	445,099	499,254	467,091	475,771	478,216	513,621	437,888	--
Sweet potatoes (1,000 cwt)	11,027	13,380	12,821	13,216	13,327	12,382	12,234	13,794	14,565	--
Dry edible beans (1,000 cwt)	21,862	28,950	30,689	27,912	29,370	30,418	33,085	26,409	19,541	27,594
	2001					2002				
	Sep	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Shipments (1,000 cwt)										
Fresh	16,968	24,508	20,758	21,353	25,061	37,589	31,401	28,311	19,370	16,621
Iceberg lettuce	3,122	3,381	2,546	2,467	3,642	4,190	3,378	4,054	3,180	3,054
Tomatoes, all	2,430	4,992	4,130	3,743	3,946	4,417	3,047	3,695	2,781	3,011
Dry-bulb onions	4,201	4,291	3,419	3,167	3,529	4,623	3,189	4,283	3,678	3,697
Others ⁶	7,215	11,844	10,663	11,976	13,944	24,359	21,787	16,279	9,731	6,859
Potatoes, all	11,524	13,870	11,368	13,965	18,128	18,881	12,152	10,830	9,957	10,074
Sweet potatoes	305	287	276	399	227	308	221	263	240	273

-- = Not available. 1. Calendar year except mushrooms. 2. Includes fresh production of asparagus, broccoli, carrots, cauliflower, celery, sweet corn, lettuce, honeydews, onions, & tomatoes through 1999. In 2000, greens, okra, chile peppers, pumpkins, radishes, and squash were added.

3. Includes processing production of snap beans, sweet corn, green peas, tomatoes, cucumbers (for pickles), asparagus, broccoli, carrots, and cauliflower. 4. Data after 1991 not comparable to previous years because commodity estimates reinstated in 1992 are included. 5. Fresh and processing agaricus mushrooms only. Excludes specialty varieties. Crop year July 1 - June 30. 6. Includes snap beans, broccoli, cabbage, cauliflower, celery, sweet corn, cucumbers, eggplant, bell peppers, honeydews, and watermelons. *Information contact: Gary Lucier (202) 694-5253*

Table 22—Other Commodities

	Annual		1999				2000				2001	
	1998	1999	2000	IV	I	II	III	IV	I	II		
Sugar												
Production ¹	7,891	9,083	8,912	4,667	2,681	922	772	4,537	2,660	827		
Deliveries ¹	9,851	10,167	10,091	2,609	2,348	2,513	2,641	2,589	2,399	2,524		
Stocks, ending ¹	3,423	3,855	4,338	3,855	4,551	3,498	2,219	4,338	5,122	3,720		
Coffee												
Composite green price ² N.Y. (¢/lb.)	114.43	88.49	71.94	91.79	85.66	75.78	66.73	59.63	54.95	51.97		
	Annual		2001				2002					
	1999	2000	2001	Mar	Oct	Nov	Dec	Jan	Feb	Mar		
Tobacco												
Avg. price to grower ³												
Flue-cured (\$/lb.)	1.74	1.79	1.86	--	1.91	1.85	--	--	--	--		
Burley (\$/lb.)	1.90	1.96	1.97	--	--	1.98	1.98	1.98	1.97	1.97		
Domestic taxable removals												
Cigarettes (bil.)	423.3	406.0	--	35.3	--	--	--	--	--	--		
Large cigars (mil.) ⁴	3,844	3,833	--	368	--	--	--	--	--	--		

-- = Not available. 1. 1,000 short tons, raw value. Quarterly data shown at end of each quarter. 2. Net imports of green and processed coffee.

3. Crop year July-June for flue-cured, October-September for burley. Includes contract sales from 2001 on. 4. Includes imports of large cigars.

Information contacts: sugar and coffee, Fannye Jolly (202) 694-5249; tobacco, Tom Capehart (202) 694-5311

World Agriculture

Table 23—World Supply & Utilization of Major Crops, Livestock, & Products

	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02 F	2002/03 F
	<i>Million units</i>									
Wheat										
Area (hectares)	221.9	214.5	218.7	230.0	228.0	225.1	216.6	219.5	215.3	217.2
Production (metric tons)	558.6	524.0	538.4	582.0	610.2	589.7	586.2	583.9	579.6	580.7
Exports (metric tons) ¹	101.6	101.5	99.1	100.2	104.3	102.0	112.8	103.5	107.5	103.9
Consumption (metric tons) ²	556.2	546.9	548.4	573.9	583.2	582.9	589.1	590.6	587.6	594.3
Ending stocks (metric tons) ³	172.4	149.4	139.5	144.5	171.5	178.3	175.4	168.7	160.6	147.1
Coarse grains										
Area (hectares)	318.7	324.0	313.9	322.7	311.1	307.2	299.6	295.2	299.6	302.0
Production (metric tons)	798.9	871.3	802.9	908.5	883.8	888.9	876.1	858.1	882.8	902.7
Exports (metric tons) ¹	86.3	98.4	87.9	94.1	85.6	96.5	104.5	103.7	101.8	100.4
Consumption (metric tons) ²	838.6	859.6	841.8	875.1	873.2	869.3	881.8	880.8	899.5	913.2
Ending stocks (metric tons) ³	179.0	190.6	151.8	185.2	195.7	215.4	209.7	187.0	170.3	159.8
Rice, milled										
Area (hectares)	144.8	147.4	148.0	149.9	151.1	152.4	155.0	151.5	150.9	144.6
Production (metric tons)	355.3	364.5	371.4	380.4	386.8	394.1	409.3	397.5	396.4	381.2
Exports (metric tons) ¹	16.5	20.7	19.7	18.9	27.6	24.9	22.8	24.4	26.1	26.2
Consumption (metric tons) ²	359.2	366.0	372.0	379.0	379.5	387.3	398.4	396.4	409.7	407.7
Ending stocks (metric tons) ³	120.0	118.5	117.9	119.3	126.5	133.3	144.2	145.3	132.0	105.5
Total grains										
Area (hectares)	685.4	685.9	680.6	702.6	690.2	684.7	671.2	666.2	665.8	663.8
Production (metric tons)	1,712.8	1,759.8	1,712.7	1,870.9	1,880.8	1,872.7	1,871.6	1,839.5	1,858.8	1,864.6
Exports (metric tons) ¹	204.4	220.6	206.7	213.2	217.5	223.4	240.1	231.6	235.4	230.5
Consumption (metric tons) ²	1,754.0	1,772.5	1,762.2	1,828.0	1,835.9	1,839.5	1,869.3	1,867.8	1,896.8	1,915.2
Ending stocks (metric tons) ³	471.4	458.5	409.2	449.0	493.7	527.0	529.3	501.0	462.9	412.4
Oilseeds										
Crush (metric tons)	190.1	208.1	217.5	216.7	226.4	240.4	247.5	254.4	264.5	267.3
Production (metric tons)	229.4	261.9	258.9	261.4	286.6	294.7	303.4	313.4	323.1	317.9
Exports (metric tons)	38.7	44.1	44.3	49.6	54.0	55.1	64.6	71.5	68.4	71.7
Ending stocks (metric tons)	20.3	27.2	22.2	19.1	28.6	32.4	35.0	35.9	34.8	28.6
Meals										
Production (metric tons)	131.7	142.1	147.3	147.8	153.8	164.5	168.8	175.1	182.2	185.7
Exports (metric tons)	44.9	46.7	49.8	50.7	51.8	54.3	56.0	56.8	59.9	61.1
Oils										
Production (metric tons)	63.7	69.6	73.1	73.7	75.2	80.5	86.0	89.0	90.9	91.8
Exports (metric tons)	24.3	27.1	26.0	28.3	29.8	31.3	33.1	34.9	36.4	37.7
Cotton										
Area (hectares)	30.7	32.2	36.0	33.8	33.8	33.0	32.3	32.4	34.1	31.7
Production (bales)	77.5	85.9	93.2	89.8	91.9	85.3	87.5	88.7	98.3	88.5
Exports (bales)	26.8	28.5	27.5	26.8	26.7	23.7	27.3	26.6	29.0	29.9
Consumption (bales)	85.4	84.4	85.6	87.6	87.1	84.7	91.0	92.0	94.3	96.4
Ending stocks (bales)	26.4	29.8	37.2	41.4	45.5	47.8	45.3	42.7	47.3	39.8
	1993	1994	1995	1996	1997	1998	1999	2000	2001 E	2002 F
Beef and Pork⁴										
Production (metric tons)	111.6	116.7	122.1	116.6	122.1	127.1	130.3	131.1	138.9	134.9
Consumption (metric tons)	110.6	115.7	120.7	114.1	120.5	125.5	129.2	129.9	131.4	133.9
Exports (metric tons) ¹	6.6	7.2	7.4	7.7	8.4	8.1	9.0	9.2	9.3	9.7
Poultry⁴										
Production (metric tons)	40.5	43.2	47.5	50.4	53.7	54.6	57.7	59.7	61.9	62.9
Consumption (metric tons)	39.4	42.0	47.0	49.6	53.1	53.7	56.8	58.8	60.4	61.3
Exports (metric tons) ¹	2.8	3.6	4.5	5.1	5.1	5.2	5.5	5.9	6.8	7.1
Dairy										
Milk production (metric tons) ⁵	--	--	--	--	370.1	373.7	378.1	382.4	384.4	389.8

-- = Not available. E = Estimated, F = forecast. 1. Excludes intra-EU trade but includes intra-FSU trade. 2. Where stocks data are not available, consumption includes stock changes. 3. Stocks data are based on differing marketing years and do not represent levels at a given date. Data not available for all countries. 4. Calendar year, selected countries. 5. Data prior to 1989 no longer comparable.

Information contacts: Crops, Ed Allen (202) 694-5288; red meat and poultry, Leland Southard (202) 694-5187; dairy, LaVerne Williams (202) 694-5190

U.S. Agricultural Trade

Table 24—Prices of Principal U.S. Agricultural Trade Products

	Annual		2001		2002					
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
Export commodities										
Wheat, f.o.b. vessel, Gulf ports (\$/bu.)	3.04	3.17	3.50	3.39	3.39	3.31	3.63	4.10	4.45	5.20
Corn, f.o.b. vessel, Gulf ports (\$/bu.)	2.29	2.24	2.28	2.28	2.21	2.29	2.37	2.53	2.80	2.89
Grain sorghum, f.o.b. vessel, Gulf ports (\$/bu.)	2.14	2.23	2.42	2.42	2.26	2.30	2.35	2.56	2.92	3.01
Soybeans, f.o.b. vessel, Gulf ports (\$/bu.)	5.02	5.26	4.93	5.06	4.92	5.11	5.39	6.03	6.02	6.02
Soybean oil, Decatur (¢/lb.)	17.51	15.01	14.49	15.46	15.31	15.99	17.69	19.12	20.61	20.33
Soybean meal, Decatur (\$/ton)	141.52	174.69	168.49	171.49	161.57	164.28	170.33	187.41	186.25	185.45
Cotton, 7-market avg. spot (¢/lb.)	52.30	57.47	39.68	33.22	31.86	31.14	36.37	39.78	39.20	37.91
Tobacco, avg. price at auction (¢/lb.)	177.82	182.73	186.21	188.49	--	--	--	185.96	183.54	180.55
Rice, f.o.b., mill, Houston (\$/cwt)	16.99	14.83	14.55	14.25	12.33	12.30	11.74	11.93	11.93	12.35
Inedible tallow, Chicago (¢/lb.)	12.99	9.92	12.50	14.15	11.75	11.00	15.00	14.20	13.48	13.58
Import commodities										
Coffee, N.Y. spot (\$/lb.)	1.05	0.92	0.55	0.44	0.50	0.45	0.43	0.44	0.41	0.45
Rubber, N.Y. spot (¢/lb.)	36.66	37.72	33.88	33.08	36.38	36.93	43.53	44.26	45.20	47.90
Cocoa beans, N.Y. (\$/lb.)	0.47	0.36	0.47	0.44	0.70	0.70	0.70	0.80	0.84	0.94

-- = Not available. Information contact: Wilma Davis (202) 694-5304

Table 25—Trade Balance

	Fiscal year			2001		2002				
	2001	2002 E	2003 F	Aug	Mar	Apr	May	June	July	Aug
Exports										
Agricultural	52,699	53,500	57,500	4,467	4,436	4,035	4,097	4,078	4,105	4,120
Nonagricultural	637,935	--	--	50,296	50,973	48,812	50,523	50,797	45,951	49,868
Total ¹	690,634	--	--	54,764	55,409	52,847	54,620	54,875	50,055	53,988
Imports										
Agricultural	39,027	40,500	42,000	3,163	3,530	3,726	3,614	3,359	3,526	3,400
Nonagricultural	1,113,615	--	--	92,700	87,319	91,856	93,416	93,536	96,479	97,939
Total ²	1,152,642	--	--	95,863	90,849	95,582	97,030	96,894	100,004	101,339
Trade balance										
Agricultural	13,672	13,000	15,500	1,304	906	309	483	719	579	720
Nonagricultural	-475,680	--	--	-42,404	-36,346	-43,044	-42,893	-42,739	-50,528	-48,071
Total ³	-462,008	--	--	-41,099	-35,440	-42,735	-42,410	-42,019	-49,949	-47,351

E = Estimate. F = Forecast. -- = Not available. Fiscal year (Oct. 1-Sep. 30). 1. Domestic exports including Department of Defense shipments (f.a.s. value). 2. Imports for consumption (customs value). 3. Preliminary. Information contact: Mary Fant (202) 694-5272.

Table 26—Indexes of Real Trade-Weighted Dollar Exchange Rates¹

	Annual			2002						
	1999	2000	2001	Feb	Mar	Apr	May	Jun	Jul	Aug
	<i>2000 is base year</i>									
Total U.S. Trade	95.8	98.7	105.0	104.7	108.1	106.8	105.6	104.6	104.8	105.0
U.S. markets										
All agricultural trade	96.5	98.6	106.1	105.9	110.2	108.6	106.8	105.0	104.4	104.9
Bulk commodities	95.9	98.6	106.6	105.5	108.7	107.5	106.2	104.9	104.0	104.8
Corn	98.8	98.6	107.6	108.2	114.0	112.2	111.4	110.6	110.8	111.3
Cotton	95.1	98.8	106.6	104.7	103.5	102.9	102.8	103.5	103.4	103.9
Rice	95.2	98.8	105.7	104.9	107.0	105.5	104.6	103.9	104.2	105.0
Soybeans	93.9	98.3	105.6	105.3	109.0	107.4	104.4	101.2	98.4	99.7
Tobacco, raw	91.2	97.9	106.5	106.3	108.1	105.8	103.0	99.6	97.7	99.5
Wheat	94.1	98.7	106.6	105.8	110.1	109.2	108.4	107.8	107.3	108.1
High-value products	97.1	98.7	105.6	104.8	109.0	107.4	105.7	104.1	103.8	104.0
Processed intermediates	95.2	98.6	105.3	104.9	107.9	106.3	104.1	101.6	99.4	100.7
Soymeal	93.7	98.7	102.7	103.1	103.7	102.3	102.8	103.3	103.4	104.5
Soyoil	91.3	99.3	102.5	102.5	103.4	103.4	103.3	103.4	103.1	103.8
Produce and horticulture	95.9	98.5	105.7	105.3	109.7	107.9	106.0	104.4	105.6	105.0
Fruits	98.2	98.7	106.6	105.7	110.0	108.5	107.0	105.6	106.2	106.0
Vegetables	99.8	99.0	105.2	104.7	109.0	107.0	104.7	103.5	106.3	104.9
High-value processed	99.1	98.8	105.8	104.6	109.7	108.0	106.5	105.0	105.0	104.6
Fruit juices	97.0	98.5	106.3	105.3	110.2	108.0	105.1	102.4	102.4	102.4
Poultry	99.1	100.1	99.1	99.5	100.4	100.0	99.7	99.7	99.5	99.4
Red meats	102.1	98.3	110.1	106.6	113.6	111.4	109.6	107.7	107.8	107.2
U.S. competitors										
All agricultural trade	88.3	98.1	104.4	105.3	110.0	108.3	104.9	101.2	98.2	100.0
Bulk commodities	91.7	98.5	104.7	106.2	112.7	112.0	112.0	112.0	112.7	113.4
Corn	88.5	98.1	104.4	104.5	132.7	133.8	134.2	132.0	126.4	126.7
Cotton	90.5	98.3	106.6	100.6	102.9	102.2	100.6	99.9	99.5	99.3
Rice	90.7	98.1	107.4	107.8	111.6	111.2	109.8	108.5	108.7	109.8
Soybeans	94.6	99.4	110.9	119.3	131.3	131.5	139.4	147.9	150.9	154.6
Tobacco, raw	101.6	99.2	107.7	109.4	106.0	104.5	105.0	105.6	105.7	107.7
Wheat	90.4	98.0	105.0	104.9	116.3	115.3	112.5	109.9	108.3	108.4
High-value products	87.6	98.0	104.1	105.1	109.5	107.7	103.9	99.7	96.2	98.1
Processed intermediates	89.2	98.2	104.9	104.9	111.6	110.3	107.8	105.1	102.8	104.1
Soymeal	93.3	99.1	110.1	112.1	147.4	150.3	158.3	163.5	161.2	162.5
Soyoil	92.5	98.9	108.2	108.3	143.5	146.2	152.1	154.6	150.7	151.3
Produce and horticulture	88.0	98.3	102.7	103.7	106.5	104.8	101.6	98.4	95.2	97.1
Fruits	89.9	98.3	105.2	104.1	107.4	105.8	103.0	100.6	98.1	100.0
Vegetables	88.4	98.4	102.8	103.6	107.3	105.5	101.3	96.7	92.3	94.3
High-value processed	86.5	97.8	104.1	105.0	108.7	106.7	102.5	97.9	94.4	96.4
Fruit juices	87.8	98.0	104.1	103.9	107.8	105.7	101.2	96.2	92.0	94.0
Poultry	88.0	98.2	105.8	107.3	108.8	106.8	103.7	100.1	97.1	99.6
Red meats	87.4	97.7	105.4	105.7	112.6	111.2	107.5	104.6	103.1	104.9
U.S. suppliers										
All agricultural trade	93.8	98.8	103.6	103.0	104.9	103.9	102.6	101.8	101.7	102.3
High-value products	93.6	98.8	103.1	102.9	104.7	103.8	102.5	101.9	101.6	102.4
Processed intermediates	93.5	98.6	103.8	104.3	107.6	106.0	103.7	102.0	102.9	102.5
Grains and feeds	95.9	98.8	104.3	104.4	107.1	105.4	102.8	100.9	101.8	101.5
Vegetable oils	92.4	98.3	105.4	104.7	107.5	106.2	103.6	101.8	101.1	101.7
Produce and horticulture	97.0	99.9	99.9	101.9	103.0	103.6	105.0	107.3	106.3	107.1
Fruits	99.0	99.7	103.5	103.8	104.5	104.6	105.8	108.8	107.7	108.8
Vegetables	104.9	100.2	98.0	97.2	96.4	97.6	98.7	100.2	98.6	99.0
High-value processed	92.1	98.4	104.2	103.1	104.9	103.8	101.9	100.7	100.6	101.4
Cocoa and products	89.1	98.6	101.7	99.6	102.1	100.1	97.1	94.2	94.9	94.6
Coffee and products	94.7	99.6	102.3	102.3	98.8	98.5	100.0	102.1	104.2	106.0
Dairy products	86.6	97.7	103.9	103.6	107.3	105.1	100.3	96.0	94.7	95.8
Fruit juices	93.5	99.0	107.5	110.2	121.7	122.1	125.4	129.0	128.8	130.7
Meats	93.4	98.4	104.5	105.3	110.7	109.3	106.8	106.3	109.7	109.0

Real indexes adjust nominal exchange rates for relative rates of inflation among countries. A higher value means the dollar has appreciated.

The weights used for "total U.S. trade" index are based on U.S. total merchandise exports to the largest 85 trading partners. Weights are based on relative importance of major U.S. customers, competitors in world markets, and suppliers to the U.S. Indexes are subject to revision for up to 1 year due to delayed reporting by some countries. High-value products are total agricultural products minus bulk commodities.

Source: Nominal exchange rates are obtained from the IMF International Financial Statistics. Exchange rates for the EU-12 are obtained from the Board of Governors of the Federal Reserve System. Full historical series are available back to January 1970 at

<http://www.ers.usda.gov/data/exchangerates/>

1. A major revision to the weighting scheme and commodity definitions was completed in May 2000. This significantly altered the series from previous versions. Beginning in August 2002, the base of the series has been changed from 1995 to 2000.

Information contact: Mathew Shane (202) 694-5282 or email: mshane@ers.usda.gov.

Table 27—U.S. Agricultural Exports & Imports

	Fiscal year			August		Fiscal year			August	
	2001	2002 E	2003 F	2001	2002	2001	2002 E	2003 F	2001	2002
	1,000 units					\$ million				
Exports										
Animals, live-	--	--	--	--	--	727	--	--	52	32
Meats and preps., excl. poultry (mt) ¹	2,442	2,000	2,000	215	227	5,193	4,800	4,900	452	428
Dairy products	--	--	--	--	--	1,121	1,000	1,100	102	81
Poultry meats (mt)1b	2,810	2,100	2,400	251	267	2,084	1,500	1,700	200	167
Fats, oils, and greases (mt)	1,049	1,300	1,200	82	140	320	--	--	28	49
Hides and skins, incl. furskins	--	--	--	--	--	1,933	1,800	1,800	170	152
Cattle hides, whole	--	--	--	--	--	1,437	--	--	130	91
Mink pelts (no.)	4,277	--	--	164	105	122	--	--	6	3
Grains and feeds (mt) ²	98,895	--	--	10,186	8,648	13,818	14,100	16,500	1,345	1,299
Wheat (mt) ³	25,275	25,000	24,500	2,326	2,504	3,248	3,500	4,000	294	370
Wheat flour (mt)	496	500	500	20	15	107	--	--	5	5
Rice (mt)	3,058	3,300	3,400	287	296	754	700	700	67	60
Feed grains, incl. products (mt) ⁴	55,878	55,200	57,400	6,346	4,712	5,470	5,400	7,000	615	528
Feeds and fodders (mt)	12,720	13,000	12,600	1,066	995	2,768	2,600	2,900	239	206
Other grain products (mt)	1,468	--	--	142	127	1,470	--	--	126	130
Fruits, nuts, and preps. (mt)	3,970	--	--	303	318	4,101	4,800	5,000	322	337
Fruit juices, incl. froz. (1,000 hectoliters)	10,781	--	--	997	783	680	--	--	63	56
Vegetables and preps.	--	--	--	--	--	4,511	3,000	3,100	358	355
Tobacco, unmanufactured (mt)	177	200	200	18	6	1,181	1,200	1,300	124	38
Cotton, excl. linters (mt) ⁵	1,654	2,400	2,500	204	141	2,079	2,300	2,700	228	135
Seeds (mt)	703	--	--	44	56	727	800	800	49	65
Sugar, cane or beet (mt)	97	--	--	10	7	38	--	--	4	3
Oilseeds and products (mt)	37,037	40,200	32,600	1,954	1,625	8,699	9,600	9,800	487	477
Oilseeds (mt)	27,748	--	--	1,269	1,117	6,097	--	--	290	286
Soybeans (mt)	26,569	28,800	22,300	1,182	1,015	5,089	5,400	5,400	235	231
Protein meal (mt)	7,223	--	--	535	335	1,427	--	--	106	68
Vegetable oils (mt)	2,066	--	--	150	172	1,175	--	--	91	123
Essential oils (mt)	55	--	--	5	6	675	--	--	54	76
Other	--	--	--	--	--	4,811	--	--	424	371
Total	--	--	--	--	--	52,699	53,500	57,500	4,462	4,120
Imports										
Animals, live	--	--	--	--	--	2,198	2,000	2,100	159	148
Meats and preps., excl. poultry (mt)	1,600	1,700	1,700	147	141	4,091	4,300	4,400	380	348
Beef and veal (mt)	1,056	--	--	97	89	2,645	--	--	248	227
Pork (mt)	399	--	--	40	39	1,039	--	--	105	84
Dairy products	--	--	--	--	--	1,728	1,800	1,700	163	162
Poultry and products	--	--	--	--	--	258	--	--	20	26
Fats, oils, and greases (mt)	106	--	--	11	7	62	--	--	5	6
Hides and skins, incl. furskins (mt)	--	--	--	--	--	162	--	--	8	7
Wool, unmanufactured (mt)	21	--	--	1	--	53	--	--	3	1
Grains and feed	--	--	--	--	--	3,189	3,600	3,800	269	322
Fruits, nuts, and preps., excl. juices (mt) ⁶	8,119	8,600	8,700	538	566	4,610	5,600	5,900	304	326
Bananas and plantains (mt)	4,093	4,100	4,100	309	320	1,156	1,200	1,200	90	89
Fruit juices (1,000 hectoliters)	29,293	29,000	29,300	2,256	2,706	649	--	--	49	60
Vegetables and preps.	--	--	--	--	--	5,183	5,400	5,500	369	390
Tobacco, unmanufactured (mt)	211	300	300	18	23	648	700	700	46	53
Cotton, unmanufactured (mt)	50	--	--	2	1	27	--	--	1	1
Seeds (mt)	316	--	--	19	24	443	--	--	25	25
Nursery stock and cut flowers	--	--	--	--	--	1,156	1,100	1,200	92	92
Sugar, cane or beet (mt)	1,378	--	--	167	87	524	--	--	55	36
Oilseeds and products (mt)	4,082	3,600	3,200	370	388	1,680	1,700	1,900	142	167
Oilseeds (mt)	987	--	--	146	82	266	--	--	25	19
Protein meal (mt)	1,150	--	--	75	134	152	--	--	11	21
Vegetable oils (mt)	1,945	--	--	149	172	1,261	--	--	106	128
Beverages, excl. fruit juices (1,000 hectoliters)	--	--	--	--	--	4,991	--	--	454	495
Coffee, tea, cocoa, spices (mt)	2,491	--	--	208	239	3,981	--	--	321	397
Coffee, incl. products (mt)	1,214	1,200	1,200	96	108	1,761	1,500	1,600	128	147
Cocoa beans and products (mt)	898	1,000	1,000	78	98	1,391	1,700	1,800	124	186
Rubber and allied gums (mt)	1,059	1,100	1,100	111	192	668	600	700	63	76
Other	--	--	--	--	--	2,725	--	--	239	263
Total	--	--	--	--	--	39,027	40,500	42,000	3,168	3,400

E = Estimate. F = Forecast. -- = Not available. Projections are fiscal years (Dec.1 through Sep. 30) and are from Outlook for U.S. Agricultural Exports. 2000 and 2001 data are from *Foreign Agricultural Trade of the U.S.* 1. Projection includes beef, pork, and variety meat. 1b. Projection includes only federally inspected broiler meats. 2. Projection includes pulses. 3. Value projection includes wheat flour. 4. Projection excludes grain products. 5. Projection includes linters. 6. Value projection includes juice.
 Information contact: Mary Fant (202) 694-5272.

Table 28—U.S. Agricultural Exports by Region

	Fiscal year			2001		2002				
	2000	2001	2002 E	Aug	Mar	Apr	May	June	July	Aug
	\$ million									
Region and country										
Western Europe	6,532	6,761	7,300	475	555	465	449	448	379	382
European Union ¹	6,193	6,249	6,500	456	494	422	404	384	325	365
Belgium-Luxembourg	514	625	--	49	40	52	35	33	29	27
France	348	352	--	16	32	26	28	25	15	17
Germany	910	907	--	72	80	54	55	52	63	41
Italy	559	509	--	43	37	42	31	31	20	39
Netherlands	1,388	1,398	--	68	131	92	98	78	57	65
United Kingdom	1,028	1,048	--	73	77	75	73	76	73	70
Portugal	134	126	--	9	10	8	4	8	4	80
Spain, incl. Canary Islands	641	590	--	61	31	34	38	40	18	37
Other Western Europe	340	512	800	19	60	42	44	64	54	17
Switzerland	250	422	--	8	54	36	39	57	44	10
Eastern Europe	168	201	200	12	14	16	16	15	17	15
Poland	47	83	--	6	3	4	8	7	7	6
Former Yugoslavia	67	44	--	1	2	2	2	2	2	2
Romania	12	24	--	1	2	3	2	3	4	3
Former Soviet Union	921	1,029	900	105	65	21	58	55	52	69
Russia	659	823	700	88	51	14	38	50	43	58
Asia	21,917	22,271	21,900	1,826	1,867	1,665	1,682	1,636	1,740	1,626
West Asia (Mideast)	2,364	2,190	2,600	218	205	217	167	194	176	146
Turkey	701	564	800	46	73	97	72	42	49	30
Iraq	8	8	--	0	--	--	--	--	--	--
Israel, incl. Gaza and W. Bank	459	435	--	48	33	40	32	52	38	45
Saudi Arabia	481	470	400	57	28	26	25	36	33	21
South Asia	415	570	900	59	68	70	35	55	39	37
Bangladesh	82	104	--	9	28	10	5	14	6	7
India	185	294	--	38	19	39	19	30	16	14
Pakistan	93	97	--	13	13	20	11	10	17	8
China	1,465	1,875	1,700	75	77	76	92	111	97	106
Japan	9,301	8,942	8,100	700	688	670	717	621	700	665
Southeast Asia	2,580	2,907	2,800	237	274	208	211	206	236	203
Indonesia	675	877	800	78	60	71	72	61	73	59
Philippines	866	836	800	71	85	49	50	45	57	46
Other East Asia	5,791	5,786	--	537	555	424	461	449	493	468
Korea, Rep.	2,531	2,541	2,800	250	245	208	209	223	227	212
Hong Kong	1,249	1,252	1,100	110	101	86	93	85	85	105
Taiwan	2,002	1,986	1,900	177	208	129	159	140	171	145
Africa	2,236	2,126	2,500	191	220	210	200	181	190	217
North Africa	1,522	1,464	1,700	140	166	127	139	103	110	124
Morocco	139	120	--	11	11	3	3	13	10	3
Algeria	254	211	--	12	37	10	35	19	15	25
Egyp	1,056	1,004	1,100	109	103	111	97	59	59	89
Sub-Saharan	715	662	800	51	54	83	62	78	80	93
Nigeria	160	233	--	20	17	34	22	25	33	25
S. Africa	165	108	--	11	14	17	15	18	11	19
Latin America and Caribbean	10,614	11,561	--	1,246	981	913	895	--	--	1,149
Brazil	253	219	300	19	24	16	18	34	31	46
Caribbean Islands	1,463	1,398	1,500	118	133	129	119	120	125	127
Central America	1,132	1,191	1,200	118	111	89	95	98	99	120
Colombia	427	442	500	38	49	38	32	41	44	41
Mexico	6,307	7,277	7,100	738	613	584	548	563	537	596
Peru	200	182	--	17	11	10	30	15	22	25
Venezuela	405	416	300	51	16	16	31	23	31	35
Canada	7,512	7,994	8,500	663	702	703	759	756	760	730
Oceania	487	472	500	38	33	33	35	46	46	45
Total	50,744	52,699	53,500	4,462	4,436	4,035	4,097	4,078	4,105	4,120

E = Estimate. F = Forecast. -- = Not available. Based on fiscal year beginning Oct. 1 and ending Sep. 30. 1. Austria, Finland, and Sweden are included in the European Union. Note: Adjusted for transshipments through Canada for 1998 and 1999 through December 1999, transshipments are not distributed by country for 2001 and 2002, but are only included in total. Information contact: Mary Fant (202) 694-5272.

Farm Income

Table 29—Value Added to the U.S. Economy by the Agricultural Sector

	1998	1999	2000	2001	09/20/02 2002F	1992-2001 average
	<i>\$ billion</i>					
Final crop output	101.7	92.4	95.0	93.9	96.6	97.8
Food grains	8.8	7.0	6.8	6.6	6.6	8.7
Feed crops	22.6	19.6	20.8	23.2	25.0	22.6
Cotton	6.1	4.6	3.8	5.0	3.9	5.7
Oil crops	17.4	13.4	13.8	14.3	15.2	15.2
Tobacco	2.8	2.3	2.3	1.9	1.8	2.6
Fruits and tree nuts	11.8	12.0	12.6	11.7	12.0	11.5
Vegetables	15.2	15.1	15.6	15.5	16.3	14.5
All other crops	17.2	18.0	18.4	18.2	18.4	16.2
Home consumption	0.1	0.1	0.1	0.1	0.1	0.1
Value of inventory adjustment ¹	-0.3	0.4	0.8	-2.7	-2.6	0.8
Final animal output	94.2	95.3	99.3	106.3	96.8	94.1
Meat animals	43.3	45.6	53.0	53.3	50.2	47.9
Dairy products	24.1	23.2	20.6	24.7	20.8	21.5
Poultry and eggs	22.9	22.9	21.8	24.6	22.6	20.7
Miscellaneous livestock	3.7	3.9	4.2	3.9	3.9	3.5
Home consumption	0.3	0.4	0.4	0.4	0.4	0.4
Value of inventory adjustment ¹	-0.3	-0.6	-0.6	-0.5	-1.0	0.0
Services and forestry	23.8	25.2	24.4	25.5	26.5	21.2
Machine hire and customwork	2.2	2.0	2.2	2.0	1.9	2.1
Forest products sold	3.1	2.8	2.9	2.8	2.6	2.7
Other farm income	8.7	10.2	8.7	10.1	11.2	7.0
Gross imputed rental value of farm dwellings	9.9	10.2	10.7	10.6	10.8	9.4
Final agricultural sector output ²	219.7	212.9	218.8	225.8	219.9	213.1
<i>Minus</i> Intermediate consumption outlays:	117.6	118.6	121.9	127.5	126.0	112.7
Farm origin	44.8	45.6	48.1	49.2	49.4	44.0
Feed purchased	25.0	24.5	24.5	25.2	26.5	23.9
Livestock and poultry purchased	12.6	13.8	16.1	15.7	13.9	13.7
Seed purchased	7.2	7.2	7.5	8.3	9.0	6.4
Manufactured inputs	28.1	27.1	28.7	29.7	28.2	26.8
Fertilizers and lime	10.6	9.9	10.0	10.3	9.2	9.9
Pesticides	9.0	8.6	8.5	8.6	8.7	8.0
Petroleum fuel and oils	5.6	5.6	7.2	7.2	6.9	5.9
Electricity	2.9	3.0	3.0	3.5	3.5	3.0
Other intermediate expenses	44.6	45.9	45.1	48.6	48.3	41.9
Repair and maintenance of capital items	10.4	10.5	10.8	11.2	11.4	10.0
Machine hire and customwork	4.9	4.8	4.5	4.3	4.3	4.5
Marketing, storage, and transportation	6.9	7.3	7.5	7.8	7.3	6.8
Contract labor	2.4	2.5	2.7	3.2	3.4	2.3
Miscellaneous expenses	20.2	20.9	19.6	22.2	21.9	18.4
<i>Plus</i> Net government transactions:	4.9	14.3	15.5	13.2	9.3	5.9
+ Direct government payments	12.4	21.5	22.9	20.7	17.0	13.0
- Motor vehicle registration and licensing fees	0.5	0.4	0.5	0.5	0.5	0.4
- Property taxes	7.0	6.8	6.9	7.0	7.1	6.7
Gross value added	107.0	108.6	112.4	111.4	103.3	106.2
<i>Minus</i> Capital consumption	19.9	20.1	20.3	20.6	20.9	19.4
Net value added ²	87.2	88.4	92.1	90.9	82.4	86.8
<i>Minus</i> Factor payments:	41.6	42.2	44.0	45.2	46.3	39.9
Employee compensation (total hired labor)	16.8	17.4	17.9	19.0	19.7	15.6
Net rent received by nonoperator landlords	11.4	11.3	11.8	12.0	12.8	11.6
Real estate and non-real estate interest	13.4	13.6	14.3	14.1	13.7	12.7
Net farm income ²	45.6	46.2	48.0	45.7	36.2	46.9

F = forecast. P = preliminary. -- = not available. Numbers may not add due to rounding. 1. A positive value of inventory change represents current-year production not sold by December 31. A negative value is an offset to production from prior years included in current-year sales. 2. Final sector output is the gross value of commodities and services produced within a year. Net value added is the sector's contribution to the National economy. Net farm income is farm operators' share of income from the sector's production activities. The concepts presented are consistent with those employed by the Organization for Economic Cooperation and Development (OECD). *Information contact: Roger Strickland (202) 694-5592, e-mail rogers@ers.usda.gov.*

To confirm that this table contains the current forecast, go to <http://www.ers.usda.gov/data/farmincome/finfidmu.htm>

Table 30—Farm Income Statistics

	1998	1999	2000	2001	2002F	1992-2001 average
	<i>\$ billion</i>					
Cash income statement						
1. Cash receipts	196.0	187.5	193.7	202.8	196.5	190.6
Crops ¹	101.9	91.9	94.1	96.4	99.1	96.9
Livestock	94.1	95.6	99.6	106.4	97.4	93.7
2. Direct Government payments ²	12.4	21.5	22.9	20.7	17.0	13.0
3. Farm-related income ³	13.9	15.0	13.8	14.9	15.7	11.7
4. Gross cash income (1+2+3)	222.3	224.0	230.4	238.5	229.2	215.3
5. Cash expenses ⁴	165.5	166.9	172.0	178.8	178.4	158.6
6. Net cash income ⁵ (4-5)	56.8	57.1	58.4	59.7	50.8	56.8
Farm income statement						
7. Gross cash income (1+2+3)	222.3	224.0	230.4	238.5	229.2	215.3
8. Noncash income ⁶	10.3	10.7	11.2	11.2	11.3	10.0
9. Value of inventory adjustment	-0.6	-0.3	0.1	-3.2	-3.6	--
10. Gross farm income (7+8+9)	232.1	234.5	241.7	246.5	236.9	226.1
11. Total production expenses	186.5	188.3	193.7	200.8	200.7	179.2
12. Net farm income (10-11)	45.6	46.2	48.0	45.7	36.2	46.9

F = forecast. -- = not available. Numbers may not add due to rounding. 1. Includes commodities placed under CCC loans and profits made on loans redeemed. 2. Direct government payments include only payments made directly to farmers, including realized marketing loan gains. In publications prior to May of 2001, marketing loan gains were included in cash receipts rather than in government payments. 3. Income from custom labor, machine hire, recreational activities, forest product sales, and other farm sources. 4. Excludes depreciation and perquisites to hired labor. 5. Excludes farm operator dwellings. 6. Value of farm products consumed on farms where produced plus the imputed rental value of farm dwellings. 6. Value of farm products consumed on farms where produced plus the imputed rental value of farm dwellings.

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The current farm income forecast and historical statistics can always be found at <http://www.ers.usda.gov/Briefing/FarmIncome/>

To confirm that this table contains the current forecast, go to <http://www.ers.usda.gov/data/farmincome/finfidmu.htm>

Table 31—Average Income to Farm Operator Households¹

	1998	1999	2000 ²	2001P	2002F
	<i>Dollars per farm</i>				
Net cash farm business income ³	14,357	13,194	11,175	14,311	11,137
Less depreciation ⁴	7,409	7,027	7,357	7,609	--
Less wages paid to operator ⁵	637	499	608	932	--
Less farmland rental income ⁶	543	802	757	477	--
Less adjusted farm business income due to other household(s) ⁷	1,332	1,262	801	1,083	--
	<i>Dollars per farm operator household</i>				
Equals adjusted farm business income	4,436	3,603	*1652	4,211	--
Plus wages paid to operator	637	499	608	932	--
Plus net income from farmland rental ⁸	868	1,312	--	--	--
Equals farm self-employment income	5,941	5,415	*2260	5,143	--
Plus other farm-related earnings ⁹	1,165	944	339	396	--
Equals earnings of the operator household from farming activities	7,106	6,359	2,598	5,539	2,622
Plus earnings of the operator household from off-farm sources ¹⁰	52,628	57,988	59,349	58,578	59,235
Equals average farm operator household income comparable to U.S. average household income, as measured by the CPS	59,734	64,347	61,947	64,117	61,858
	<i>Dollars per U.S. household</i>				
U.S. average household income ¹¹	51,855	54,842	57,045	--	--
	<i>Percent</i>				
Average farm operator household income as percent of U.S. average household income	115.2	117.3	108.6	--	--
Average operator household earnings from farming activities as percent of average operator household income	11.9	9.9	4.2	8.6	4.2

P=preliminary. F = forecast. -- = Not available. * = The relative standard error exceeds 25 percent, but is no more than 50 percent.

1. This table derives farm operator household income estimates from the Agricultural Resource Management Study (ARMS) that are consistent with Current Population Survey (CPS) methodology. The CPS, conducted by the Census Bureau, is the source of official U.S. household income statistics. The CPS defines income to include any income received as cash. The CPS definition departs from a strictly cash concept by including depreciation as an expense that farm operators and other self-employed people subtract from gross receipts when reporting net cash income. 2. Prior to 2000, net cash income from operating another farm and net cash income from farm land rental were included in earnings from farming activities. However, because of a change in the ARMS survey design, net cash income from a farm other than the one being surveyed and net cash income from farm land rental are not separable from total off-farm income. Although there is no effect upon estimates of farm operator household income in 2000, estimates of farm self-employment, other farm related earnings, earnings of the household from farming activities, and earnings of the farm from off-farm sources are not strictly comparable to those from previous years. 3. A component of farm sector income. Excludes incomes of contractors and landlords as well as the income of farms organized as nonfamily corporations or cooperatives and farms run by a hired manager. Includes the income of farms organized as proprietorships, partnerships, and family corporations. 4. Consistent with the CPS definition of self-employment income, reported depreciation expenses are subtracted from net cash income. The ARMS collects farm business depreciation used for tax purposes. 5. Wages paid to the operator are subtracted here because they are not shared among other households that have claims on farm business income. These wages are added to the operator household's adjusted farm business income to obtain farm self-employment income. 6. Gross rental income is subtracted here because net rental income from the farm operation is added below to income received by the household. 7. More than one household may have a claim on the income of a farm business. On average, 1.1 households share the income of a farm business. 8. Includes net rental income from the business. Also includes net rental income from farmland held by household members that is not part of the farm business. Beginning in 2000, net income from farmland rental is considered as part of off-farm income. (See footnote 2.) 9. Wages paid to other operator household members by the farm business and net income from a farm business other than the one being surveyed. In 2000, however, net income from a farm business other than the one being surveyed is included in off-farm earnings. (See footnote 2.) Beginning in 1996, also includes the value of commodities provided to household members for farm work. 10. Wages, salaries, net income from nonfarm businesses, interest, dividends, transfer payments, etc. Beginning in 2000, also includes net cash income from another farm and net cash income from farm rental. (See footnote 2.) 11. From the CPS. Sources: U.S. Dept. of Agriculture, Economic Research Service, 1998, 1999, and 2000 Agricultural Resource Management Study (ARMS) for farm operator household data. U.S. Dept. of Commerce, Bureau of the Census, Current Population Survey (CPS), for U.S. average household income. Information contact: Bob Hoppe (202) 694-5572 or rhoppe@ers.usda.gov

Table 32—Balance Sheet of the U.S. Farming Sector

	1998	1999	2000	2001F	2002F
	<i>\$ billion</i>				
Farm assets	1,085.3	1,140.8	1,188.3	1,230.4	1,239.5
Real estate	840.4	886.4	929.5	971.3	981.0
Livestock and poultry ¹	63.4	73.2	76.8	76.3	75.9
Machinery and motor vehicles	91.7	92.3	92.0	92.5	93.6
Crops stored ^{2,3}	29.9	28.3	27.9	28.5	28.4
Purchased inputs	5.0	4.0	4.9	4.6	4.6
Financial assets	54.8	56.6	57.1	57.1	56.0
Total farm debt	172.9	176.4	184.0	192.8	196.5
Real estate debt ³	89.6	94.2	97.5	103.1	104.6
Non-real estate debt ⁴	83.2	82.2	86.5	89.8	91.9
Total farm equity	912.4	964.4	1,004.3	1,037.5	1,042.9
	<i>Percent</i>				
Selected ratios					
Debt to equity	18.9	18.3	18.3	18.6	18.8
Debt to assets	15.9	15.5	15.5	15.7	15.9

F = forecast. P = preliminary. Numbers may not add due to rounding. 1. As of December 31. 2. Non-CCC crops held on farms plus value above loan rates for crops held under CCC. 3. Includes CCC storage and drying facilities loans, but excludes debt on operator dwellings.

4. Excludes debt for nonfarm purposes.

Information contacts: Ken Erickson (202) 694-5565, erickson@ers.usda.gov and Jim Ryan (202) 694-5586, e-mail: jimryan@ers.usda.gov

Note: The current farm income and balance sheet forecasts can always be found at <http://www.ers.usda.gov/Briefing/FarmIncome/>

Table 33—Cash Receipts from Farming

	Annual			2001						
	1999	2000	2001	Jul	Feb	Mar	Apr	May	Jun	Jul
	<i>\$ million</i>									
Commodity cash receipts¹	187,481	193,695	202,849	16,890	12,639	13,941	14,131	13,988	13,619	16,269
Livestock and products	95,611	99,559	106,431	9,543	7,504	7,775	7,768	7,553	7,173	8,407
Meat animals	45,614	52,981	53,289	4,713	4,035	3,841	4,065	3,670	3,429	4,367
Dairy products	23,207	20,608	24,695	2,077	1,780	1,920	1,814	1,848	1,680	1,624
Poultry and eggs	22,896	21,816	24,577	2,061	1,458	1,766	1,663	1,798	1,781	1,725
Other	3,893	4,155	3,870	692	230	248	227	237	283	692
Crops	91,870	94,136	96,418	7,347	5,136	6,166	6,363	6,435	6,446	7,862
Food grains	6,969	6,758	6,595	963	233	285	254	217	642	1,258
Feed crops	19,555	20,775	23,245	1,823	1,161	1,233	923	919	1,259	1,795
Cotton (lint and seed)	4,630	3,840	4,954	119	221	204	54	146	181	199
Tobacco	2,273	2,315	1,880	192	39	0	0	0	0	211
Oil-bearing crops	13,355	13,826	14,317	639	713	718	584	753	675	747
Vegetables and melons	15,127	15,600	15,512	1,299	1,157	1,406	1,658	1,817	1,652	1,370
Fruits and tree nuts	11,953	12,626	11,742	1,271	489	669	752	973	1,043	1,241
Other	18,007	18,396	18,172	1,042	1,122	1,651	2,137	1,610	994	1,041
Government payments	21,513	22,896	20,727	--	--	--	--	--	--	--
Total	208,994	216,592	223,577	16,890	12,639	13,941	14,131	13,988	13,619	16,269

-- = Not available. Annual values for the most recent year and monthly values for current year are preliminary and were estimated as of the 20th of the month prior to publication. 1. Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gains realized on redemptions during the period.

Information contact: Larry Traub (202) 694-5593 or ltraub@ers.usda.gov. To receive current monthly cash receipts via e-mail, contact Larry Traub.

Table 34—Cash Receipts from Farm Marketings, by State

Region and State	Livestock and products				Crops ¹				Total ¹			
	2000	2001P	June 2002	July 2002	2000	2001P	June 2002	July 2002	2000	2001P	June 2002	July 2002
	\$ million											
North Atlantic												
Maine	260	274	23	22	242	211	8	17	502	485	31	40
New Hampshire	60	66	6	6	91	90	4	5	151	155	10	11
Vermont	432	490	33	32	69	67	3	13	500	557	36	45
Massachusetts	93	94	8	8	295	273	25	27	388	367	33	35
Rhode Island	8	8	1	1	38	40	2	3	46	47	3	4
Connecticut	168	177	14	14	328	299	14	18	496	476	28	32
New York	1,931	2,221	157	156	1,191	1,199	62	78	3,122	3,420	218	234
New Jersey	192	204	8	59	635	617	48	65	826	821	56	124
Pennsylvania	2,766	3,146	212	215	1,297	1,309	79	84	4,063	4,455	291	299
North Central												
Ohio	1,754	1,864	125	127	2,616	2,818	143	261	4,370	4,682	267	387
Indiana	1,701	1,870	119	144	2,883	3,235	151	261	4,584	5,105	271	405
Illinois	1,711	1,843	118	129	5,416	5,704	321	405	7,127	7,547	439	534
Michigan	1,334	1,489	99	101	1,988	1,980	95	208	3,322	3,469	194	309
Wisconsin	3,866	4,464	302	296	1,498	1,432	77	122	5,364	5,896	379	418
Minnesota	3,883	4,288	292	307	3,580	3,813	153	198	7,463	8,102	444	505
Iowa	5,757	5,936	418	494	5,047	5,615	283	441	10,804	11,550	701	934
Missouri	2,680	2,679	148	170	1,933	2,145	97	147	4,614	4,824	244	317
North Dakota	629	720	24	19	2,077	2,259	138	157	2,706	2,979	162	176
South Dakota	2,037	2,255	140	164	1,769	1,852	106	167	3,806	4,108	246	331
Nebraska	5,917	6,086	404	599	3,076	3,402	173	300	8,993	9,489	577	899
Kansas	5,500	5,536	362	478	2,519	2,585	123	427	8,019	8,121	485	905
Southern												
Delaware	558	662	45	40	179	186	12	13	736	848	57	53
Maryland	836	949	69	68	615	647	39	56	1,451	1,596	108	124
Virginia	1,549	1,673	111	141	735	771	52	75	2,285	2,444	163	216
West Virginia	339	348	27	31	58	59	7	8	397	408	34	39
North Carolina	4,300	4,644	322	331	3,040	3,087	193	267	7,340	7,731	515	598
South Carolina	793	882	73	67	728	764	92	85	1,521	1,646	165	152
Georgia	3,107	3,540	240	238	1,991	1,975	204	111	5,099	5,515	444	349
Florida	1,375	1,458	100	100	5,402	4,958	224	107	6,777	6,416	324	208
Kentucky	2,372	2,268	114	446	1,277	1,281	55	57	3,649	3,548	168	503
Tennessee	990	1,127	77	84	1,007	1,034	69	90	1,997	2,161	146	174
Alabama	2,646	2,815	196	188	560	705	33	31	3,205	3,520	230	219
Mississippi	2,036	2,276	161	153	691	871	49	56	2,727	3,147	210	209
Arkansas	3,255	3,507	240	227	1,483	1,625	156	65	4,738	5,132	396	292
Louisiana	652	701	58	62	1,135	1,116	35	35	1,787	1,817	94	97
Oklahoma	3,441	3,153	187	258	853	874	95	116	4,293	4,027	282	374
Texas	9,159	9,339	627	759	4,211	4,456	309	424	13,370	13,796	935	1,183
Western												
Montana	1,106	1,128	42	28	737	657	23	40	1,844	1,785	65	68
Idaho	1,628	2,060	140	162	1,744	1,788	105	121	3,372	3,848	245	283
Wyoming	800	837	54	107	157	145	3	9	957	983	57	116
Colorado	3,330	3,374	276	306	1,281	1,354	81	122	4,612	4,729	357	428
New Mexico	1,613	1,670	103	131	500	545	66	83	2,114	2,215	169	214
Arizona	1,070	1,166	81	87	1,217	1,409	158	50	2,287	2,575	240	136
Utah	772	853	69	70	248	263	15	21	1,020	1,116	85	91
Nevada	237	271	23	23	150	153	7	15	387	425	30	38
Washington	1,709	1,728	137	148	3,408	3,464	304	306	5,117	5,192	441	454
Oregon	829	825	58	68	2,264	2,298	128	191	3,093	3,123	186	260
California	6,252	7,346	522	536	19,431	18,546	1,786	1,867	25,683	25,892	2,308	2,402
Alaska	32	28	2	2	20	24	2	3	52	52	5	5
Hawaii	92	91	8	8	430	419	36	35	522	511	44	43
U.S.	99,559	106,431	7,173	8,407	94,136	96,418	6,446	7,862	193,695	202,849	13,619	16,269

Annual values for the most recent year are preliminary and were estimated as of the 20th of the month prior to publication. Totals may not add because of rounding. 1. Sales of farm products include receipts from commodities placed under nonrecourse CCC loans, plus additional gains realized on redemptions during the period.

Information contact: Larry Traub (202) 694-5593 or ltraub@ers.usda.gov. To receive current monthly cash receipts via e-mail, contact Larry Traub.

Table 35—CCC Net Outlays by Commodity & Function

	Fiscal year									
	1994	1995	1996	1997	1998	1999	2000	2001	2002 ¹	2003 ¹
	<i>\$ million</i>									
Commodity/Program										
Feed grains:										
Corn	625	2,090	2,021	2,587	2,873	5,402	10,136	6,297	3,237	4,807
Grain sorghum	130	153	261	284	296	502	979	478	237	324
Barley	202	129	114	109	168	224	397	217	165	190
Oats	5	19	8	8	17	41	61	36	61	60
Corn and oat products	10	1	0	0	0	0	6	8	13	0
Total feed grains	972	2,392	2,404	2,988	3,354	6,169	11,579	7,036	3,713	5,381
Wheat and products	1,729	803	1,491	1,332	2,187	3,435	5,321	2,922	1,944	2,864
Rice	836	814	499	459	491	911	1,774	1,423	1,056	1,209
Upland cotton	1,539	99	685	561	1,132	1,882	3,809	1,868	3,685	3,245
Tobacco	693	-298	-496	-156	376	113	657	386	-25	-66
Dairy	158	4	-98	67	291	480	684	1,140	580	2,255
Soybeans	-183	77	-65	5	139	1,289	2,840	3,281	3,600	3,730
Peanuts	37	120	100	6	-11	21	35	136	220	1,239
Sugar	-24	-3	-63	-34	-30	-51	465	31	-154	-118
Honey	0	-9	-14	-2	0	2	7	23	6	0
Wool and mohair	211	108	55	0	0	10	-2	38	26	23
Operating expense ²	6	6	6	6	5	4	60	5	60	6
Interest expenditure	-17	-1	140	-111	76	210	736	428	240	366
Export programs ³	1,950	1,361	-422	125	212	165	216	-2,047	185	20
1988-2000 Disaster/tree/ livestock assistance	2,566	660	95	130	3	2,241	1,452	2,326	284	0
Conservation Reserve Program	0	0	2	1,671	1,693	1,462	1,511	1,658	1,821	1,854
Other conservation programs	0	0	7	105	197	292	263	288	286	212
Other	-137	-103	320	104	28	588	858	1,163	1,156	744
Total	10,336	6,030	4,646	7,256	10,143	19,223	32,265	22,105	18,683	22,964
Function										
Price support loans (net)	527	-119	-951	110	1,128	1,455	3,369	3,189	5,220	3,615
Cash direct payments: ⁴										
Production flexibility contract	0	0	5,141	6,320	5,672	5,476	5,057	4,105	3,962	0
Direct payment	0	0	0	0	0	0	0	0	0	3,844
Counter-cyclical payment	0	0	0	0	0	0	0	0	0	5,828
Market loss assistance	0	0	0	0	0	3,011	11,046	5,455	221	1,819
Deficiency	4,391	4,008	567	-1,118	-7	-3	1	-1	0	0
Loan deficiency	495	29	0	0	478	3,360	6,419	5,293	6,311	5,178
Oilseed	0	0	0	0	0	0	460	921	0	0
Cotton user marketing	149	88	34	6	416	280	446	237	204	184
Other	22	9	61	1	0	1	461	820	20	906
Conservation Reserve Program	0	0	2	1,671	1,693	1,435	1,476	1,625	1,804	1,854
Other conservation programs	0	0	0	85	156	247	215	229	248	211
Noninsured Assistance (NAP)	0	0	2	52	23	54	38	64	174	192
Total direct payments	5,057	4,134	5,807	7,017	8,431	13,861	25,619	18,748	12,944	20,016
1988-2000 crop disaster	2,461	577	14	2	-2	1,913	1,251	1,848	240	0
Emergency livestock/tree/DRAP livestock indemn./forage assist.	105	83	81	128	5	328	201	478	43	0
Purchases (net)	293	-51	-249	-60	207	668	120	-1,310	-1,031	-1,807
Producer storage payments	12	23	0	0	0	0	0	0	0	0
Processing, storage, and transportation	112	72	51	33	38	62	81	122	134	148
Export donations ocean transportation	156	50	69	34	40	323	370	362	362	17
Operating expense ²	6	6	6	6	5	4	60	5	60	6
Interest expenditure	-17	-1	140	-111	76	210	736	428	240	366
Export programs ³	1,950	1,361	-422	125	212	165	216	-2,047	185	20
Other	-326	-105	100	-28	3	234	242	282	286	583
Total	10,336	6,030	4,646	7,256	10,143	19,223	32,265	22,105	18,683	22,964

1. Estimated in FY 2003 Mid Session Review Budget which was released on July 15, 2002 based on May 2002 supply & demand estimates. The CCC outlays shown for 2002-2003 include the impact of the Farm Security and Rural Investment Act of 2002 which was enacted on May 13, 2002.

2. Does not include CCC Transfers to General Sales Manager. 3. Includes Export Guarantee Program, Direct Export Credit Program, CCC Transfers to the General Sales Manager, Market Access (Promotion) Program, starting in FY 1991 and starting in FY 1992 the Export Guarantee Program - Credit Reform, Export Enhancement Program, Dairy Export Incentive Program, and Technical Assistance to Emerging Markets, and starting in FY 2000, Foreign Market Development Cooperative Program and Quality Samples Program. 4. Includes cash payments only. Excludes generic certificates in FY 1986-96. Minus (-) indicates a net receipt (excess of repayments or other receipts over gross outlays of funds).

Information contact: Richard Pazdalski, Farm Service Agency-Budget at (202) 720-3675 or Richard_Pazdalski@wdc.fsa.usda.gov

Food Expenditures

Table 36—Food Sales

	Annual			2002					
	1999	2000	2001	Jul	Aug	Sep	Jul	Aug	Sep
	<i>\$ billion</i>								
Sales ¹									
At home ²	409.2	424.2	437.0	39.0	39.4	36.1	263.1	302.5	338.6
Away from home ³	331.0	348.8	366.0	33.5	34.6	31.2	223.4	257.9	289.1
	<i>2001 \$ billion</i>								
Sales ¹									
At home ²	432.1	438.1	437.0	38.6	39.1	35.7	259.6	298.7	334.4
Away from home ³	348.6	358.9	366.0	32.7	33.6	30.2	218.9	252.5	282.8
	<i>Percent change from year earlier (\$ billion)</i>								
Sales ¹									
At home ²	6.4	3.7	3.0	3.3	2.0	-1.8	1.7	1.8	1.4
Away from home ³	5.0	5.4	4.9	4.9	5.7	4.8	5.1	5.2	5.2
	<i>Percent change from year earlier (2001 \$ billion)</i>								
Sales ¹									
At home ²	4.4	1.4	-0.3	2.2	1.2	-2.8	0.4	0.5	0.1
Away from home ³	2.4	3.0	2.0	2.2	2.8	1.7	3.0	3.0	2.8

-- = Not available. 1. Food only (excludes alcoholic beverages). Not seasonally adjusted. 2. Excludes donations and home production.

3. Excludes donations, child nutrition subsidies, and meals furnished to employees, patients, and inmates. *Information contact: Annette Clauson (202) 694-5389*

Note: This table differs from Personal Consumption Expenditures (PCE), table 2, for several reasons: (1) this series includes only food, excluding alcoholic beverages and pet food which are included in PCE; (2) this series is not seasonally adjusted, whereas PCE is seasonally adjusted at annual rates; (3) this series reports sales only, but PCE includes food produced and consumed on farms and food furnished to employees; (4) this series includes all sales of meals and snacks, while PCE includes only purchases using personal funds, excluding business travel and entertainment. For a more complete discussion of the differences, see "Developing an Integrated Information System for the Food Sector," ERS Ag. Econ. Rpt. No. 575, Aug. 1987, available at <http://www.ers.usda.gov/publications/aer575/>

Transportation

Table 37—Rail Rates; Grain & Fruit-Vegetable Shipments

	Annual			2001			2002			
	1999	2000	2001	Sep	Apr	May	Jun	Jul	Aug	Sep
Rail freight rate index ¹ (Dec. 1984=100)										
All products	113.0	114.5	116.6	117.8	118.4	118.5	119.0	119.1	118.8	119.0
Farm products	121.7	123.1	124.5	125.4	124.2	124.2	124.9	125.0	124.6	126.4
Grain food products	99.7	100.4	102.8	103.4	103.1	103.1	103.5	103.6	103.3	103.3
Grain shipments										
Rail carloadings (1,000 cars) ²	24.2	21.8	21.6	20.7	19.7	18.3	20.1	21.1	21.2	19.6
Barge shipments (mil. ton) ³	3.5	3.1	2.9	2.4	3.6	3.4	4.4	4.4	3.5	2.2
Fresh fruit and vegetable shipments ⁴										
Piggy back (mil. cwt)	0.7	0.8	0.8	0.8	0.9	1.1	1.0	1.6	10.5	0.8
Rail (mil. cwt)	1.1	1.4	1.4	12.3	1.2	1.7	2.3	1.0	0.9	12.3
Truck (mil. cwt)	45.2	45.0	44.0	36.7	48.1	57.0	55.0	45.3	43.8	36.7

-- = Not available. 1. Department of Labor, Bureau of Labor Statistics. 2. Weekly average; from Association of American Railroads. 3. Shipments on Illinois and Mississippi waterways, U.S. Corps of Engineers. 4. Annual data are monthly average. Agricultural Marketing Service, USDA.

Information contact: Allen Baker (202) 694-5290

Indicators of Farm Productivity

Table 38—Indexes of Farm Production, Input Use, & Productivity¹

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
	<i>1992 = 100</i>									
Farm output	88	83	89	94	94	100	94	107	101	106
All livestock products	92	93	94	95	98	100	100	108	110	109
Meat animals	95	97	97	96	99	100	100	102	103	100
Dairy products	94	96	95	98	98	100	99	114	115	115
Poultry and eggs	81	83	86	92	96	100	104	110	114	119
All crops	86	75	86	92	92	100	90	106	96	103
Feed crops	84	62	85	88	86	100	76	102	83	98
Food crops	84	76	83	107	82	100	96	97	90	93
Oil crops	88	72	88	87	94	100	85	115	99	107
Sugar	95	91	91	92	96	100	95	106	98	94
Cotton and cottonseed	92	96	75	96	109	100	100	122	110	117
Vegetables and melons	90	81	85	93	97	100	97	113	108	112
Fruit and nuts	95	102	98	97	96	100	107	111	102	102
Farm input ¹	101	100	100	101	102	100	101	102	101	100
Farm labor	101	103	104	102	106	100	96	96	92	100
Farm real estate	100	100	102	101	100	100	98	99	98	99
Durable equipment	120	113	108	105	103	100	97	94	92	89
Energy	102	102	101	100	101	100	100	103	109	104
Fertilizer	106	97	94	97	98	100	111	109	85	89
Pesticides	92	79	93	90	100	100	97	103	94	106
Feed, seed, and purchased livestock	97	96	91	99	99	100	101	102	109	95
Inventories	102	98	93	97	100	100	104	99	108	104
Farm output per unit of input	87	83	90	93	92	100	94	105	100	106
Output per unit of labor										
Farm ²	87	81	86	92	89	100	98	111	110	106
Nonfarm ³	95	95	96	96	97	100	100	101	--	--

-- = Not available. Values for latest year preliminary. 1. Includes miscellaneous items not shown separately. 2. Source: Economic Research Service. 3. Source: Bureau of Labor Statistics. *Information contact: John Jones (202) 694-5614*

Food Supply & Use

Table 39—Per Capita Consumption of Major Food Commodities¹

See *Agricultural Outlook*, October 2002

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